

Rocky Flats Environmental Technology Site

BUILDING 776/777 CLOSURE PROJECT DECOMMISSIONING OPERATIONS PLAN

REVISION 0

OCTOBER 18, 1999

NOV 1999
RECEIVED
RECORDS CENTER

ADMIN RECORD

*REVIEWED FOR CLASSIFICATION

By [Signature]
Date 10/18/99

IA- B776-A-00012

LIST OF EFFECTIVE PAGES

<u>Pages</u>	<u>Effective Date</u>	<u>Pages</u>	<u>Effective Date</u>
All			

The following DCFs are active for this procedure:

None	



TABLE OF CONTENTS

<u>Section</u>	<u>Page</u>
EXECUTIVE SUMMARY.....	11
1.0 INTRODUCTION.....	13
2.0 BUILDING CLUSTER DESCRIPTION.....	15
2.1 Building History.....	18
2.2 Building 776/777 Fire.....	19
2.3 Current Status.....	19
2.4 Building Classification.....	20
2.5 Expected Condition of Buildings 776/777 and 730 at Start of Decommissioning.....	20
3.0 ALTERNATIVES ANALYSIS.....	21
4.0 PROJECT APPROACH.....	23
4.1 SET Descriptions.....	23
4.2 SET Prioritization.....	26
4.3 Building 776/777 Cluster Characterization.....	26
4.3.1 Scoping Characterization.....	26
4.3.2 Reconnaissance Level Characterization.....	26
4.3.3 In-Process Characterization.....	31
4.4 Building and Equipment Cleanup Levels.....	35
4.4.1 Radionuclides.....	35
4.4.2 Hazardous Waste.....	35
4.4.3 Beryllium Contamination.....	36
4.4.4 Polychlorinated Biphenyls.....	37
4.4.5 Asbestos Containing Material.....	37

4.5	Closure of RCRA-Regulated Units.....	37
4.5.1	Closure Options	37
4.5.2	Closure Documentation	41
4.6	Pre-Demolition Survey	41
4.7	Independent Verification.....	41
4.8	Endpoints.....	42
4.9	Size Reduction Methodologies	42
4.10	Decontamination Approach	44
4.10.1	Dusting, Wiping, and Scrubbing.....	45
4.10.2	Vacuuming.....	45
4.10.3	Strippable Coatings.....	46
4.10.4	Fixative Coatings	46
4.10.5	Scarifiers	47
4.10.6	Paving Breakers and Chipping Hammers	47
4.10.7	Grit Blasting.....	47
4.10.8	Carbon Dioxide Blasting.....	47
4.10.9	Chemical Decontamination.....	47
4.11	Building 776/777 Decommissioning.....	48
4.11.1	Expected Condition of Building 776/777 at Beginning of Decommissioning	48
4.11.2	Building 776/777 Decommissioning Sequence	48
4.11.3	Building 776/777 Gloveboxes, B-Boxes and Hoods	49
4.11.4	Building 776/777 Large Equipment.....	49
4.11.5	Building 776/777 Ventilation Systems	49
4.11.6	Equipment Buried Under Building 776/777	50
4.12	Building 730 Decommissioning.....	50
4.13	Waste Management	50
4.14	Work Controls.....	50
4.15	Effluent Controls.....	50
4.16	Authorization Basis.....	50

4.17	Performance Standard	51
4.18	Records Disposition	51
4.18.1	CERCLA Administrative Record	51
4.18.2	RCRA Operating Record	51
4.18.3	Project Record.....	51
4.18.4	Closeout Report	52
5.0	HEALTH AND SAFETY	53
5.1	Integrated Safety Management System	54
5.1.1	Defining the Scope of Work	55
5.1.2	Integrated Work Control	60
5.1.3	Work Planning	61
5.1.4	Work Authorization	63
5.2	Criticality Safety	67
5.3	Radiation Protection	68
5.4	Hazardous Material Protection	68
5.5	Radioactive and Hazardous Waste Management	68
5.5.1	Waste Management and Environmental Protection.....	68
5.5.2	Transportation.....	69
5.6	Conduct of Operations	69
5.7	Fire Protection.....	69
5.8	Industrial Safety.....	69
5.9	Quality Assurance.....	70
5.10	Emergency Preparedness	70
5.11	Preliminary Hazards Analysis.....	70
6.0	WASTE MANAGEMENT	75
6.1	RCRA/CERCLA Transition	75

6.2	Waste Types and Volumes	75
6.2.1	Hazardous Waste.....	76
6.2.2	Low-Level/Low-Level Mixed (LLW/LLM) Wastes	76
6.2.3	Transuranic/Transuranic Mixed (TRU/TRM) Wastes	77
6.2.4	Residues/Mixed Residues (RES/REM)	77
6.2.5	Polychlorinated Biphenyls	78
6.2.6	Asbestos Containing Material	78
6.2.7	Sanitary Waste	78
6.2.8	Wastewater.....	79
6.2.9	Waste Chemicals.....	79
6.2.10	Idle Equipment.....	80
6.3	Wastes Requiring Further Processing Prior to Off-Site Disposal.....	82
6.3.1	LLM/TRM Wastes Managed Under the Site Treatment Plan	82
6.3.2	TRU Sludges and TRU/TRM Oils.....	83
6.5	Waste Accumulation, Staging, Storage, and Treatment	83
6.6	Waste Disposal	84
6.7	Waste Minimization and Recycling.....	84
7.0	APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS.....	87
7.1	Air.....	87
7.2	Solid Waste	87
7.3	Treatment	88
7.3.1	Routine Treatment	88
7.3.2	Debris Treatment	88
7.4	Wastewater	89
7.5	Asbestos Containing Material.....	89
7.6	Polychlorinated Biphenyls	89
7.7	Migratory Birds	89

8.0 ENVIRONMENTAL CONSEQUENCES OF ACTION	91
8.1 Environmental Impact Issues	91
8.2 Relative Impacts.....	92
8.3 Geology and Soils.....	92
8.4 Air Quality	92
8.5 Water Quality.....	94
8.6 Human Health Impacts	94
8.7 Radiological Impacts to Workers and the Public	95
8.8 Non-Radiological Health Impacts	96
8.9 Occupational Hazards	96
8.10 Plants and Animals	96
8.11 Waste Management	97
8.12 Historic Resources	97
8.13 Noise	98
8.14 Socioeconomic Effects.....	98
8.15 Cumulative Effects.....	98
8.16 Mitigation Measures	99
8.17 Unavoidable Adverse Effects	99
8.18 Short-Term Uses and Long-Term Productivity.....	100
8.19 Irreversible and Irretrievable Commitments of Resources	100
9.0 QUALITY ASSURANCE	101
9.1 Background	101

9.2	Quality Criteria	101
10.0	IMPLEMENTATION SCHEDULE	109
11.0	PROJECT ORGANIZATION	111
11.1	Roles and Responsibilities	111
11.1.1	Internal Organizations	111
11.1.2	External Organizations	112
11.1.3	Working Relationships	112
11.2	Team Organization Structure	113
11.3	Team Processes	115
11.4	Responsibilities	115
11.5	Team Interfaces	116
12.0	COMMENT RESPONSE SUMMARY	119
13.0	REFERENCE INFORMATION	121
13.1	Acronyms and Abbreviations	121
13.2	Definitions	124
13.3	References	132

APPENDICES:

Appendix A	Set Descriptions, Endpoints, and Hazard Matrix	135
Appendix B	Ground Water Action Levels	189
Appendix C	Building 776/777 Closure Project Administrative Record	193
Appendix D	Building 776/777 Closure Project Schedule	195
Appendix E	Building 776/777 Closure Project ARARs	231
Appendix F	Comment Response Summary	243

LIST OF TABLES

Table 1.	Historical Timeline	18
Table 2.	Alternatives Analysis Summary	22
Table 3.	Extent of Contamination and Hazards in Buildings 776/777 and 730.....	29
Table 4.	In-Process Characterization Required for Contamination and Hazards in Buildings 776/777 and 730	32
Table 5.	Release Criteria.....	36
Table 6.	Building 776/777 RCRA-Regulated Units	38
Table 7.	Proposed Size Reduction Techniques	43
Table 8.	Strippable Coatings.....	46
Table 9.	Integrated Safety Management System.....	56
Table 10.	Training Implementation Matrix for Decommissioning Work.....	65
Table 11.	Preliminary Hazards Analysis.....	71
Table 12.	Building 776/777 Waste Inventory	75
Table 13.	Estimate of Wastes to be Generated During Decommissioning	76
Table 14.	"Excluded Chemical" Areas in Building 776/777	80
Table 15.	Building 776/777 Idle Equipment with Hazardous Materials Inventory.....	81
Table 16.	Treatment Processes that may be Conducted in Temporary Units	85
Table 17.	Material Recycling Options	86
Table 18.	Comparison Summary of NEPA Relative Impacts.....	93

LIST OF FIGURES

Figure 1. Closure Planning Phases for Type 2 and Type 3 Buildings in the Building 776/777 Cluster.....	14
Figure 2. Building 776/777 Additions.....	16
Figure 3. Building 776/777 Cluster Facilities	17
Figure 4. Building 776/777 First Floor SET Locations	24
Figure 5. Building 776/777 Second Floor SET Locations	25
Figure 6. SET Prioritization	27
Figure 7. Ground-Penetrating Radar Survey Locations (Building 776/777)	30
Figure 8. Waste Decision Logic	45
Figure 9. Integrated Safety Management Process	54
Figure 10. Work Planning Process	58
Figure 11. Building 776/777 Closure Project Organizational Chain	113
Figure 12. Building 776/777 Closure Project Organization Structure and Functions.....	114

EXECUTIVE SUMMARY

The Building 776/777 Cluster is comprised of Buildings 701, 702, 703, 710, 712, 712A, 713, 713A, 730, 776/777, and 781, which are located within the Protected Area (PA) of the Rocky Flats Environmental Technology Site (RFETS). Closure of the Building 776/777 Cluster is necessary to meet the goals of the Rocky Flats Cleanup Agreement (RFCA), (Ref. 1), and the RFETS Closure Project Baseline (CPB). Three alternatives were considered for the near-term management of the Building 776/777 Cluster:

- Alternative 1 - Decommissioning
- Alternative 2 - No Action with Safe Shutdown Maintenance
- Alternative 3 - Reuse of the Facilities

The alternatives were evaluated for effectiveness, feasibility, and relative costs. Alternative 1 is the selected alternative. Decommissioning clearly supports the Rocky Flats Vision (Ref. 2) of safe, accelerated, cost-effective closure. This alternative has the lowest life-cycle costs and most rapid risk reduction, and it is integrated with Site operations. This alternative also maintains long-term protection of public health and the environment. Short-term impacts on the environment (i.e., impacts occurring during the interval of the action) can be physically and administratively controlled. There are no significant negative aspects to decommissioning the Building 776/777 Cluster at this time.

Currently, the buildings in the B776/777 Cluster are scheduled to be deactivated and decommissioned by the close of fiscal year (FY)06 and remediated by the close of FY07. These dates are subject to change, based on accelerated schedules currently under development. Environmental impacts resulting from the Building 776/777 Closure Project will contribute incrementally to potential site-wide cumulative impacts associated with the overall RFETS Closure Project. Given the existing industrial setting of the Building 776/777 Cluster, environmental impact issues associated with the project are relatively limited.

For planning purposes, the Cluster was divided into small manageable groupings of similar equipment and rooms that could be worked independently and within a one-year estimated time frame. A total of 84 groups, or SETs, were defined for the Cluster. Next, the SETs were prioritized to establish the order in which they would be decommissioned, taking into account such factors as physical constraints, personnel and environmental health and safety (H&S), operational/technical issues, management issues, costs, and waste generation issues. The Decontamination and Decommissioning Characterization Protocol (DDCP), (Ref. 3), was then used in conjunction with process knowledge to complete a reconnaissance level characterization (RLC) for each SET. Results were documented in the Reconnaissance Level Characterization Report (RLCR), (Ref. 4), which identified the presence of radiological and beryllium (Be) contamination, as well as hazards such as lead and other heavy metals, polychlorinated biphenyls (PCBs), special nuclear material (SNM) holdup, radioactive sources, and waste chemicals in many of the SETs located in Building 776/777 and Building 730. Following the RLC, endpoints (i.e., completion criteria) were developed for each SET and size reduction and decontamination methodologies were examined to complete the development of the decommissioning sequence.

Buildings with significant contamination or hazards (i.e., Type 3 buildings) and buildings without significant contamination or hazards, but in need of decontamination (i.e., Type 2 buildings), will be decommissioned in accordance with this Decommissioning Operations Plan (DOP). Buildings within the Cluster that are free of contamination (i.e., Type 1 buildings) will be decommissioned using Site procedures upon notification of the Lead Regulatory Agency (LRA), (i.e., the Colorado Department of Public Health and Environment [CDPHE]). As detailed in the RLCR, Building 776/777 is believed to be a Type 3 building, Building 730 is believed to be a Type 2 building, and the remaining buildings in the Cluster are believed to be Type 1 buildings. Therefore, the scope of this DOP is limited to Buildings 776/777 and 730. It is recognized that additional sampling and analysis will be required to verify the characterization of the Type 1 buildings. In the event sampling results indicate the presence of contamination and/or hazards in one or more of the Type 1 buildings, the building(s) will be re-typed and added to a subsequent decision document(s), which may include a modification to this DOP.

The RFCA definition of decommissioning includes the demolition of building structures and disposition of building slabs. At this time, demolition methods and techniques are still being identified for the Building 776/777 Cluster, along with associated controls and performance specifications necessary to protect worker safety, public health, and the environment. As a result, the demolition stage of decommissioning is not included in Revision 0 of the DOP. This information will be provided in a subsequent decision document(s), which will constitute a major modification to this DOP. In addition to the routine requirements for major modifications, this information on Building 776/777 demolition will be submitted for a public comment period equivalent to that for the initial Building 776/777 DOP.

Work performed under this DOP will be accomplished in conformance with the RFETS Integrated Work Control Program (IWCP), Integrated Safety Management System (ISMS), and applicable quality assurance (QA), radiological control, and waste management requirements. At this time, a site-wide strategy for managing remediation waste has not been finalized. As a result, during the early stages of decommissioning, hazardous and mixed wastes will be managed in compliance with the substantive and administrative requirements of the Resource Conservation and Recovery Act (RCRA), (Ref. 5), the Colorado Hazardous Waste Act (CHWA), (Ref. 6), the Colorado Hazardous Waste Regulations (CHWR), (Ref. 7), and the RFETS RCRA Part B Permit (Ref. 8). Once the remediation waste management strategy has been finalized, this information will be provided in a minor modification to this DOP, consistent with the waste management requirements of the DPP.

Decommissioning activities will be documented in the Building 776/777 Closure Project Record, RCRA Operating Record, and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA, Ref. 9) Administrative Record. Upon completion of decommissioning activities and final characterization, a Final Closeout Report will be prepared for review and approval by the LRA.

1.0 INTRODUCTION

Closure of the Building 776/777 Cluster is necessary to meet the goals of RFCA (Ref. 1) and the Closure Project Baseline. The Building 776/777 Closure Project is managed under the RFETS Closure Project Baseline, which contains the life-cycle schedule.

The overall project strategy is to prioritize closure activities, taking into account personnel, public, and environmental H&S; physical constraints; operational and technical issues; management issues; cost; and waste generation issues. As shown in Figure 1, closure activities for the Building 776/777 Cluster are divided into three phases: deactivation, decommissioning (including demolition and disposition of building slabs), and environmental restoration.

Currently, the buildings in the B776/777 Cluster are scheduled to be deactivated and decommissioned by the close of FY06, and remediated by the close of FY07. These dates are subject to change, based on accelerated schedules currently under development.

Deactivation activities are being completed in conformance with the Building 776/777 Closure Project Execution Plan (PEP). Buildings with significant contamination or hazards and buildings without significant contamination or hazards, but in need of decontamination, will be decommissioned in accordance with this DOP. Buildings within the Cluster that are free of contamination will be decommissioned using Site procedures following notification to the LRA.

The RFCA (Ref. 1) definition of decommissioning includes the demolition of building structures. At this time, demolition methods and techniques are still being identified for the Building 776/777 Cluster, along with associated controls and performance specifications necessary to protect worker safety, public health, and the environment. As a result, the demolition stage of decommissioning is not included in Revision 0 of the DOP. This information will be provided in a subsequent decision document(s), which will constitute a major modification to this DOP. In addition to the routine requirements for major modifications, this information on Building 776/777 demolition will be submitted for a public comment period equivalent to that for the initial Building 776/777 DOP.

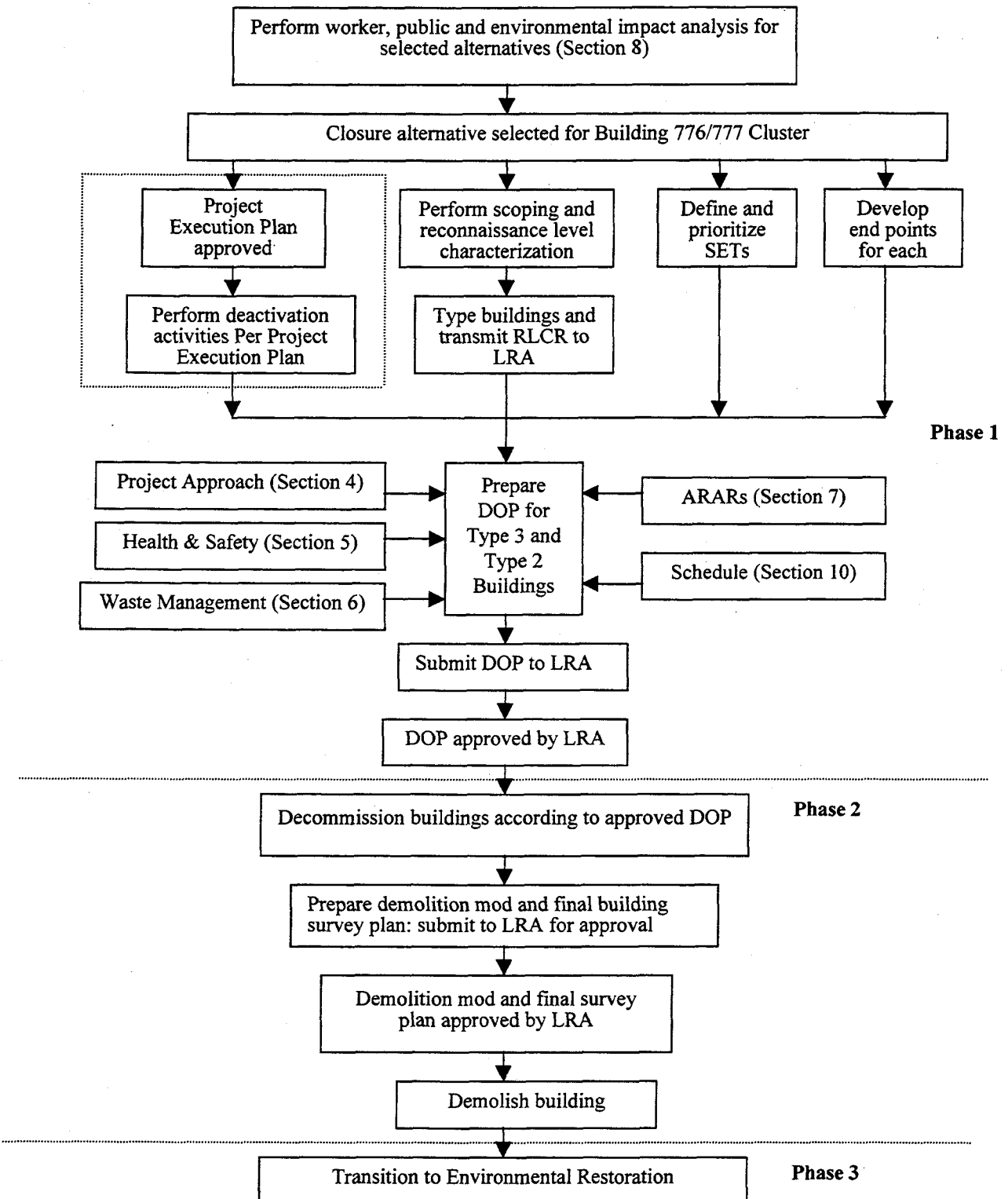


Figure 1. Closure Planning Phases for Type 2 and Type 3 Buildings in the Building 776/777 Cluster

2.0 BUILDING CLUSTER DESCRIPTION

Building 776/777 is a two-story structure with a partial basement and common wall separating Buildings 776 and 777. A tunnel located at the northwest corner of Building 776 connects to Building 771, an above-ground crossover on the east side of Building 777 connects to Building 779, and a hallway on the south side of Building 776 connects to Building 707.

The first floor of Building 776/777 has an area of 135,000 ft²; the second floor, 88,000 ft²; and the basement, 1,600 ft², for a building total of 224,600 ft². Since the building was first constructed, several additions have been made to the original structure (see Figure 2), including the east side of Building 777 (columns [cols.] 21-25, D-L); parts storage (cols. 19-23, L-P); assembly development (cols. 23-35, H-L); dock enclosures (Room 437); radiography, cleaning and plating facility (cols. 23-25, L-P); high pressure gas test facility (southeast corner of Building 777); two-story office addition (southeast side of Building 777); fabrication (cols. 1-3W, A-P); autoclave facility; and the Betatron vault. In addition, a second roof was added to cover the majority of the original roof after a major fire in 1969.

Buildings 776 and 777 share most utilities, including supply and control of potable water, eyewash and emergency body showers, cooling water, sanitary sewage, building heating and air conditioning, glovebox (GB) and vacuum air supply, emergency electrical power, and compressed air.

Buildings 776 and 777 also share some utilities with surrounding buildings. Measures for re-routing connections or providing temporary services will be included in the planning and engineering for Building 776/777 decommissioning activities. Following is a list of the shared utilities:

- Breathing air is provided from Building 707;
- Steam from Building 776/777 heats the water for the Building 778 locker rooms;
- Plant air is shared between Buildings 776/777, 779 and 771;
- Emergency power for the Building 776/777 criticality alarm panel (located in Building 750) is supplied from Building 708, which is also the Building 707 emergency generator;
- The classified telecommunications center for the Site is located in Building 777;
- The chainveyor between Building 707 and Buildings 776/777 is a common line provided with inert gas from both Building 707 and Buildings 776/777; and
- Building 776/777 provides electrical service and ventilation for the Building 771 tunnel and Building 779 crossover.

Support systems are located in the following buildings, which are also included in the Building 776/777 Cluster:

- Building 701 (research and development laboratory, 5,170 ft²),
- Building 702 (pump house for B712, 924 ft²),

This page has been left blank due to classification issues.
Personnel with access to UCNI may obtain this information from
the Building 776/777 Cluster Closure Project Manager.

Figure 2. Building 776/777 Additions

- Building 703 (pump house for B713, 1,080 ft²),
- Building 710 (steam reducing station, 352 ft²),
- Building 712 (cooling tower, 2,425 ft²),
- Building 712A (propane valve house, 90 ft²),
- Building 713 (cooling tower, 2,475 ft²)
- Building 713A (valve pit, 250 ft²),
- Building 730 (plenum deluge tank pit, 698 ft²), and
- Building 781 (helium compressor pit, 440 ft²).

Figure 3 shows the location of the buildings that comprise the Building 776/777 Cluster.

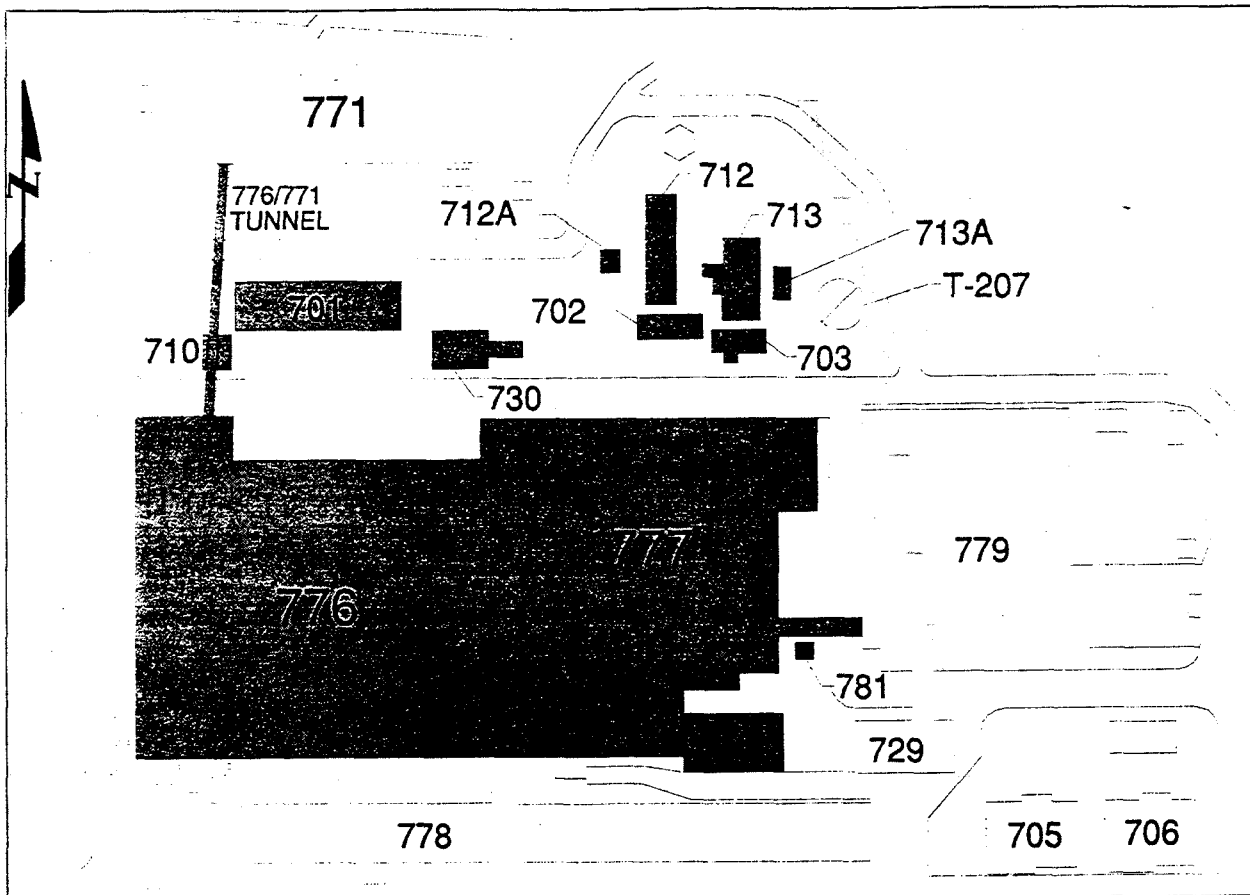


Figure 3. Building 776/777 Cluster Facilities

The Building 776/777 Cluster was constructed between 1955 and 1957. Beginning in 1958 and continuing through 1969, Building 776 was the main manufacturing facility for plutonium (Pu) weapons components and it housed a Pu foundry and fabrication operations. The main function of Building 777 was parts assembly. Following a major fire in Building 776/777 in 1969, the majority of the foundry and fabrication operations were transferred to Building 707. Although limited production operations were resumed in Building 776/777 when cleanup activities were completed, at that point, the main focus of the building was shifted to waste and residue handling, disassembly of retired weapons components, and special projects. Processes conducted in Building 776 included size reduction, advanced size reduction, pyrochemistry, coatings operations, and test runs of organic waste and combustibles in a fluidized bed incinerator (FBI). Building 777 operations included machining, product assembly and disassembly, testing and inspection of special weapons projects, and support operations, such as laboratories. Table 1 presents an historical summary of Building 776/777 Cluster operations.

Table 1. Historical Timeline

Year	Event
1957	Construction of Building 776/777 Cluster was completed.
1958	The first significant machining of Pu began.
1964	Pu and carbon tetrachloride exploded during a briquetting operation in Building 776.
1965	The "GB drain line fire" occurred during maintenance on a plugged oil coolant drain line in Building 776/777. The fire was attributed to spontaneous combustion of Pu chips. The fire spread contamination inside the building. Affected areas were decontaminated and painted to fix contamination that was not removed.
1969	Waste operations began in Building 776, originally initiated for disposing of contaminated material from the 1969 fire.
1971	Clean-up activities for the 1969 fire were completed on October 18th.
1972	Pu fabrication operations in Building 776 were transferred to Building 707. Building 776 was converted to a waste storage and size reduction facility.
1989	Pu production operations ceased in November.

2.2 Building 776/777 Fire

On May 11, 1969, a major fire in Building 776/777 resulted in gross radiological contamination of Building 776/777 and portions of Buildings 771 and 779. The fire occurred in Room 134 in the north foundry line and propagated by way of the chainveyor system. The first floor operating areas of Buildings 776 and 777 were highly contaminated. The entire second floor of Building 776 was moderately contaminated from air-borne contamination through the floors and walls. The office areas in Building 776 were moderately contaminated from water-borne material, mainly on the floors. The roof of Building 776 was moderately contaminated in three areas. Two contaminated areas were localized around sanitary vent penetrations; the third, more extensive area extended from the exhaust duct to the edge of the roof.¹ The fire resulted in the relocation of some of the foundry, fabrication, and assembly operations to Building 707. During cleanup, some pieces of contaminated equipment, including presses, a rolling mill, casting furnaces and associated GBs were size reduced and buried under the floors in Building 776 (see Section 4.3.2.1 for further details).

After the fire, the major production operations in the building were reduced to machining operations on the south line in Building 776 and disassembly of retired weapons components and assembly operations in Building 777. In Building 776, the empty spaces resulting from the fire were converted to perform waste-related operations, focusing on waste reduction. Other operations conducted in the Cluster included Pu recovery operations in Building 776 and support operations, such as storage and laboratory work, in both buildings. These operations continued until production was curtailed at Rocky Flats in 1989.

2.3 Current Status

Routine operations are conducted in Building 776/777 16 hours per day, five days per week. However, stationary operating engineers, radiological control technicians, and security personnel staff the building 24 hours a day, seven days a week. The Shift Manager, Configuration Control Authority (CCA), or designee, provides initial emergency response and mitigation actions during off-shift hours and normal administrative functions on the weekends, holidays, and off-normal shifts. With the exception of Buildings 776/777 and 701, buildings and structures within the Cluster are not normally occupied and are usually under lock and key.

The majority of building personnel are involved in maintaining vital safety systems (VSS), performing Limiting Conditions for Operations (LCO) surveillances and RCRA inspections, repackaging special nuclear material (SNM), and managing waste.

The Building 776/777 Cluster contains RCRA regulated tanks systems, treatment units, and container storage areas, including rooms, vaults, and GBs. A complete listing of RCRA units is provided in Section 4.5. In addition, the Cluster contains the following six individual hazardous substance sites (IHSSs):

- 118.1 - Multiple solvent spills west of Building 730,

¹ Details regarding roof contamination and removal will be provided in the demolition modification to this DOP, which will be added as a major modification in compliance with §127 of RFCA prior to the initiation of demolition activities. The demolition modification will be submitted for a public comment period equivalent to that for the initial Building 776/777 DOP.

- 118.2 - Radiological contamination in soil,
- 132 - Leaking underground laundry waste tanks,
- 144 - Radiological contaminated laundry waste water line break,
- 150.2 - Radiological contamination in soil (resulting from the 1957 and 1969 fires), and
- 150.7 - Radiological contamination in soil (resulting from the 1969 fire).

Building 776/777 currently stores approximately 3,200 waste containers. Of the 3,200 containers, 100 are sanitary waste, 650 are low-level (LLW)/low-level mixed (LLM) waste, 350 are transuranic (TRU)/transuranic mixed (TRM) waste, and the remaining 2,100 are residues (RES/REM). In addition, the building contains 279 contaminated GBs and B-boxes with interconnecting chainveyor lines, a size reduction vault, advanced size reduction facility (ASRF), FBI pilot unit, FBI production unit, horizontal and vertical accelerator, HEPA low specific activity counter, and a supercompactor.

SNM is being removed from vaults within the building to reduce the amount to below the safeguard termination limits. This activity began in FY98 and is planned for completion in FY99. SNM high holdup areas have been identified. Additional SNM holdup scans are planned and these areas will be remediated, as necessary.

2.4 Building Classification

The Decommissioning Program Plan (DPP), (Ref. 10), defines building types as follows:

- Type 1 buildings are free of contamination,
- Type 2 buildings are without significant contamination or hazards, but in need of decontamination, and
- Type 3 buildings have significant contamination or hazards.

Each building type has its own degree of regulation. The DPP serves as the RFCA (Ref. 1) decision document for Type 1 buildings, thus decommissioning may proceed based on RFETS procedures upon notification of the LRA. Types 2 and 3 buildings require a separate RFCA decision document. Based on the RLC performed in 1997 and 1998 (see Section 4.3.2), Building 776/777 is believed to be a Type 3 building, Building 730 is believed to be a Type 2 building, and the remaining buildings in the Cluster are believed to be Type 1 buildings. As a result, this DOP addresses the decommissioning of Building 776/777 and Building 730, only. However, it is recognized that additional sampling and analysis will be required to verify the characterization of the Type 1 buildings. In the event future survey data indicate that contamination and/or hazards are present in one or more of these buildings, they will be addressed in a subsequent decision document(s), which may include a modification to this DOP.

2.5 Expected Condition of Buildings 776/777 and 730 at Start of Decommissioning

The expected condition of Building 776/777 and Building 730 at the start of decommissioning is discussed in Section 4.11 and 4.12.

3.0 ALTERNATIVES ANALYSIS

Alternatives considered for Buildings 776/777 and 730 support the Rocky Flats Vision (Ref. 2), which requires buildings to be decontaminated for future use or decommissioned, as appropriate. The following three alternatives were examined:

- Alternative 1 - Decommissioning
- Alternative 2 - No Action with Safe Shutdown Maintenance
- Alternative 3 - Reuse of the Facilities

The criteria used to evaluate the alternatives were effectiveness, feasibility, and relative costs. The results of the alternatives analysis are summarized in Table 2.

Alternative 1, Decommissioning, is the selected alternative because it is the best alternative to meet the evaluation criteria. The Rocky Flats Vision of safe, accelerated, and cost-effective closure is clearly supported by the decommissioning of the Building 776/777 Cluster. This alternative results in the lowest life-cycle costs and most rapid risk reduction, and it is integrated with Site operations. This alternative also maintains long-term protection of public health and the environment. Physical and administrative measures can be implemented to control short-term impacts to the environment (i.e., impacts occurring during the interval of the action). At this time, there are no significant negative aspects to decommissioning the Cluster.

Alternative 2, No Action with Safe Shutdown Maintenance, does not achieve RFETS goals. This alternative does not accomplish accelerated closure, and it defers decommissioning to an unspecified date. This results in an increase in the life-cycle cost of closure. Inaction achieves the short-term protection of public health and the environment; however, this protection decreases over time, due to continued degradation of systems and equipment through aging. Furthermore, under this alternative the waste and debris requiring treatment and/or disposal and the risks associated with managing them are also deferred.

Alternative 3, Reuse, is not feasible because it is neither required nor beneficial. As with Alternative 2, implementation of this action will result in deferral, not elimination, of the decommissioning activities necessary for final closure.

Table 2. Alternatives Analysis Summary

Alternative	Description	Effectiveness	Feasibility	Relative Cost
1-Decommissioning	<i>Decommissioning</i> activities will follow specific plans approved by DOE and the LRA. Activities consist of decontamination, as deemed necessary; equipment dismantlement; size reduction; and demolition of building structures.	Decommissioning is effective in achieving the long-term goals of RFCA. The mortgage costs are eliminated, and the risks and hazards are significantly reduced.	Technology currently exists to achieve the objectives of this alternative. Integration with other Site activities can be accomplished.	Immediate decommissioning results in the lowest life-cycle costs. Once decommissioning is achieved, minimal landlord costs are incurred.
2 - No Action	<i>No Action</i> will maintain the 776/777 Closure Project in its current configuration. No additional equipment would be removed unless the present safe shutdown status of the Cluster is compromised.	<i>No Action</i> delays closure activities that must be performed to meet the goals of RFCA. Deferring closure could make funding available to other Site closure activities. However, <i>No Action</i> could increase risk to workers and the environment if the integrity of the facility is jeopardized.	<i>No Action</i> would disrupt the long-term plans for RFETS.	<i>No Action</i> results in higher costs than immediate decommissioning since landlord costs continue to be incurred until decommissioning begins.
3 - Reuse	<i>Reuse</i> of the 776/777 Cluster would maintain the facilities in their current configuration. A new mission for the facilities, in support of the present Site cleanup mission, would be assigned by the Site Utilization Review Board. Depending on the nature of this mission, removal of equipment may be necessary. No changes would be made before definition of the new mission.	<i>Reuse</i> of the 776/777 Cluster was evaluated by the RFETS Facility Use Committee, which determined there was no further mission for the Cluster. Use of the Cluster for an alternative off-site use was evaluated in accordance with the RFCA Preamble (Objective #7), and DOE Order 4300.1C, subparagraph (g), Disposal of Government-Owned Land Improvements. No further use was identified.	Because no new mission has been identified for the Cluster, implementation of this alternative is not administratively feasible.	This alternative results in the greatest life-cycle costs as the reuse mission would more than likely require expenditures for modifications to the buildings in addition to existing landlord/ surveillance costs. Furthermore, decommissioning costs (adjusted for future value) would still be required.

4.0 PROJECT APPROACH

The decommissioning planning process for the Building 776/777 Cluster has been completed and the costs and schedules are included in the CPB. During the course of the project, there will be cases where circumstances differ from those predicted. The flexibility to revise planned activities is essential to the successful management of this project.

The RFCA definition of decommissioning includes the demolition of building structures and disposition of building slabs. At this time, demolition methods and techniques are still being identified for the Building 776/777 Cluster, along with associated controls and performance specifications necessary to protect worker safety, public health, and the environment. As a result, the demolition stage of decommissioning is not included in Revision 0 of the DOP. This information will be provided in a subsequent decision document(s), which will constitute a major modification to this DOP. In addition to the routine requirements for major modifications, this information on Building 776/777 demolition will be submitted for a public comment period equivalent to that for the initial Building 776/777 DOP.

4.1 SET Descriptions

For planning purposes, the Building 776/777 Cluster has been divided into small, manageable groupings of similar equipment and rooms that can be worked independently. The groupings are referred to as SETs. Eighty-four SETs were developed for the Cluster. The SETs are the foundation for the planning, prioritization, cost estimation, and scheduling of decommissioning activities.

SET descriptions are presented in Appendix A and SET locations are shown in Figure 4 and Figure 5. The SETs are categorized by six types: 1) GB, 2) tank, 3) equipment, 4) room, 5) room/equipment, and 6) building structure. Following is a general description of each SET type:

- 1) GB SETs include GBs, equipment in the GBs, associated external equipment and instrumentation, and piping from the GBs to the nearest cutoff point. In some cases, GB lines are very long and may be broken into as many as four SETs for that particular line.
- 2) Tank SETs include the tank, associated external equipment and instrumentation, and piping from the tank to the nearest logical cutoff point.
- 3) Equipment SETs include specific pieces of equipment, associated external equipment and instrumentation, and piping from the equipment to the nearest cutoff point.
- 4) Room SETs include all equipment and instrumentation not associated with GBs, tanks, or equipment SETs; tools, miscellaneous items, and piping not removed with GBs, or tanks; equipment SETs below eight feet, and interior walls.
- 5) Room/equipment SETs include all equipment (GBs, tanks, etc.) and instrumentation, tools, miscellaneous items, utilities below eight feet, and interior walls.
- 6) The building structure SETs include interior and exterior walls, floors, ceilings, and utilities above eight feet.

This page has been left blank due to classification issues.
Personnel with access to UCNI may obtain this information from the
Building 776/777 Closure Project Manager.

Figure 4. Building 776/777 First Floor SET Locations

This page has been left blank due to classification issues.
Personnel with access to UCNI may obtain this information from the
Building 776/777 Closure Project Manager.

Figure 5. Building 776/777 Second Floor SET Locations

4.2 SET Prioritization

Once the SETs had been identified, an initial meeting was held to establish the order in which they should be removed. To ensure applicable areas of concern would be identified, representatives from engineering, operations, authorization basis (AB), maintenance, and utilities organizations attended the meeting. An historical subject matter expert (SME), the closure project team members, and representatives from DOE and the CDPHE also attended. The SETs were prioritized using a classical value engineering technique that ranks importance through use of a weighted matrix. The criteria for ranking SETs included physical constraints, safety, operational/technical issues, management, cost, and waste generation. The initial SET prioritization was then re-evaluated, factoring in the amount of funding available each fiscal year, pathways out of the facility, logistics, resources, and the decommissioning learning curve. The final results of the SET prioritization effort are shown in Figure 6.

4.3 Building 776/777 Cluster Characterization

The Building 776/777 Cluster was characterized using a three-step approach:

- 1) Scoping characterization,
- 2) Reconnaissance level characterization (RLC), and
- 3) In-process characterization.

The following paragraphs describe each step in more detail.

4.3.1 Scoping Characterization

During scoping characterization, existing records and documents were collected, then present and former Building 776/777 employees were interviewed to determine the physical, hazardous, radiological, and chemical conditions of the Cluster. Based on the information collected, the B776/777 Closure Project Manager conducted an RLC to document the configuration of equipment, piping, ventilation systems, and types and levels of contamination and hazards within the Cluster.

4.3.2 Reconnaissance Level Characterization

The purpose of the RLC is to establish a preliminary estimate of the types of contamination and hazards that are present. The RLC identifies the location and extent of radiological and Be contamination, and documents the presence of asbestos, lead and heavy metals, PCBs, SNM holdup, waste chemicals, radioactive sources, and physical hazards. The RLC for the Building 776/777 Cluster was performed from November 1997 through June 1998. During that time, process knowledge and detailed walkdowns were used to identify:

- Capital equipment,
- GBs and hoods,
- Tanks and their respective sizes,

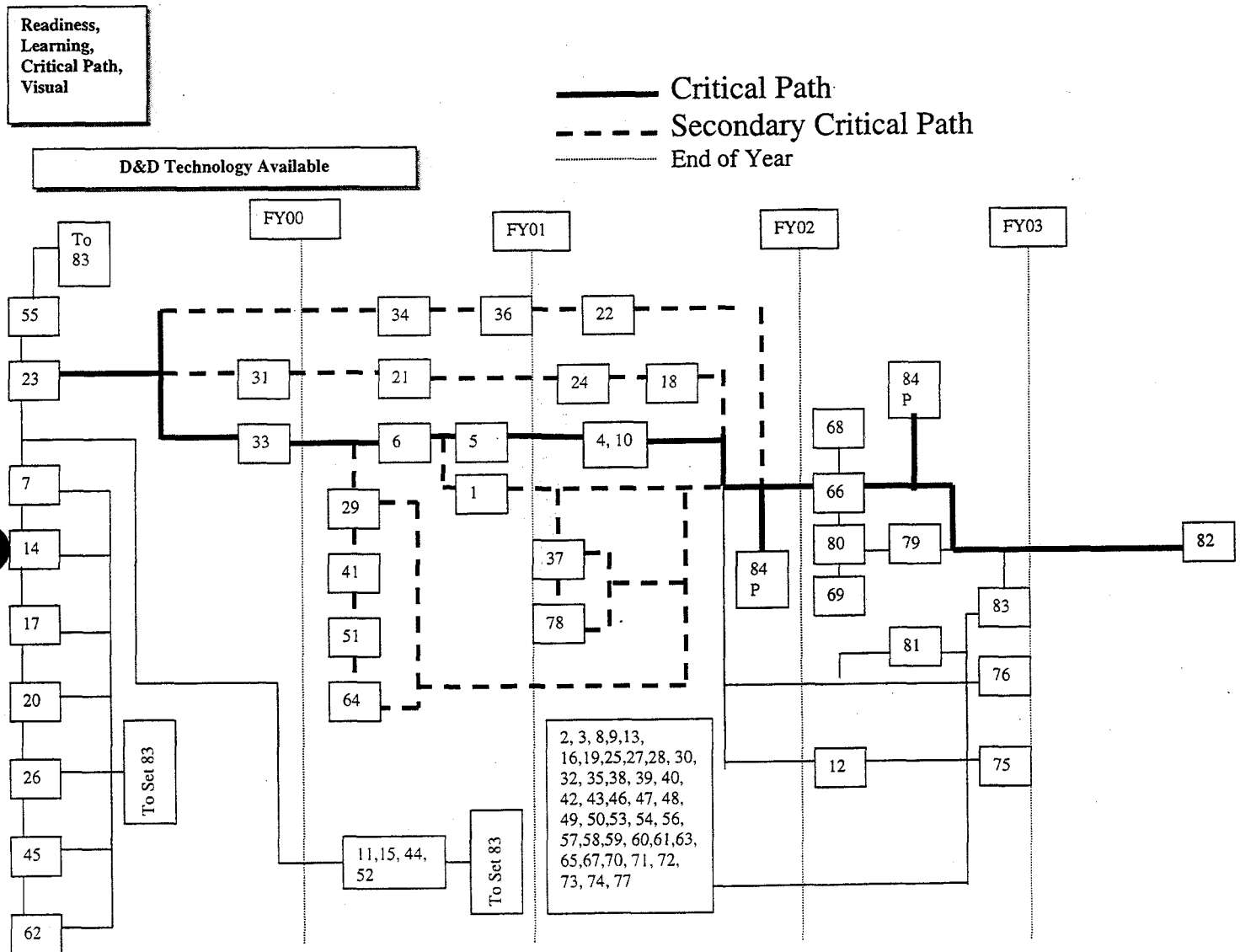


Figure 6. SET Prioritization

- Other equipment,
- Classified matter,
- Contamination areas and approximate contaminant levels,
- Locations of chemicals,
- Utility and process service connections including water, electrical, steam, and ventilation, and
- Documentation regarding building construction materials.

Results from the RLC for the Building 776/777 Cluster are documented in the RLCR, which was transmitted to the LRA in December of 1998. A summary of the contaminants and hazards found in Buildings 776/777 and 730 is presented in Table 3.

4.3.2.1 Equipment Buried Under Building 776/777

In February 1998, ground-penetrating radar was used in designated areas of Building 776/777 to confirm the presence of material cemented in original stairwells, under GBs, and buried under the floors after the 1969 fire. The radar images are on file with the Project Record. These areas are included in SET 84. Planning and engineering for this SET will be completed prior to decommissioning the SET. In-process characterization will be performed during the planning and engineering effort and detailed information concerning the methods that will be used to remove the buried equipment before the building is demolished will be identified. Due to the sensitivity of this work, in-process characterization of buried equipment within the Building 776/777 structure will be provided to the LRA for review. Work packages, currently undeveloped, for removal of equipment buried or cemented within the building structure will be shared with the regulators per the consultative process. Under-building contamination will be addressed during environmental restoration. The decommissioning of this SET is not scheduled to begin until FY03.

Testimony from the 1969 fire indicated that some of the original stairwells under GBs were filled with contaminated debris, such as personal protective equipment (PPE), plastic, and other combustibles, then filled with concrete. Because ground-penetrating radar only identifies density changes, these stairwells were not investigated.

Fire testimony documentation also indicated that contaminated debris may have been buried in equipment pits in Building 776. In addition, the original construction drawings for the foundation showed numerous below-grade areas (i.e., equipment pits, underpasses, and sumps) that are no longer visible or accessible. Based on the construction drawings, the original below-grade areas were mapped to determine where equipment might be buried.

Ground-penetrating radar was used in Rooms 118 (SET 63), 134 (SET 67), 127 (SET 68), and the Carpenter Shop (SET 54). These areas are shown in Figure 7. A detailed characterization of these areas may be found in Appendix A of the RLCR. The floor under the FBI in Room 118 (Area C) was confirmed to have a definite change in density that is believed to be the rollers from the rolling mill and the saw used to cut the rollers. The results of the ground penetrating radar in Room 134 adjacent to the manual disassembly area on the ASRF (Area D) were inconclusive. This area will remain as a suspect area of concern for planning purposes during

Table 3. Extent of Contamination and Hazards in Buildings 776/777 and 730

CONTAMINANT	HAZARDS
Radiological Contamination*	<p><u>B776/777</u> - <i>Building Structure</i>: The building floors, walls, roof, and ceilings are assumed to be contaminated to the levels that existed after the May 1969 Pu fire. <i>Equipment</i>: Pu production equipment surface contamination levels are stated in the RLCR. Equipment internal contamination levels are assumed to be $>10^6$ counts per minute (cpm). <i>Process Piping</i>: Process piping is contaminated to levels of the May 1969 fire. <i>Electrical Panels & Conduit</i>: Electrical panels and conduit on the first and second floors are posted as "Contamination Areas" due to the 1969 Pu fire. <i>Soil Contamination</i>: Soil contamination under the building is expected from two sources: Fire water used to extinguish the 1969 fire and ground water fluctuations resulting in seepage of contaminated ground water from surrounding IHSSs into the soil. <i>Ventilation</i>: Zone IA ventilation system contamination levels are assumed to be $>10^6$. <i>Buried Equipment</i>: Contaminated equipment was buried in various locations under the floor after the 1969 fire; contamination levels are assumed to be $>10^6$ cpm.</p> <p><u>B730</u> - Radiological contamination remains from radioactive solutions previously stored in the B730 Pit.</p>
Be Contamination*	<p><u>B776/777</u> - Be contamination is present due to machining, welding, handling and storage of Be parts.</p> <p><u>B730</u> - None identified.</p>
ACM**	<p><u>B776/777</u> - Present or potentially present in floor and ceiling tiles, mastic under floor tiles and carpet, walls, piping and equipment insulation, and roof tar.</p> <p><u>B730</u> - None identified.</p>
Lead & Other Heavy Metals	<p><u>B776/777</u> - Lead is present or potentially present throughout the facility in the following items: lead aprons, lead tape, leaded glass, solder in printed circuit boards, lead shielding, leaded gloves, tank sludge, incandescent lights, and paint. Paint may contain other heavy metals in addition to lead. Mercury is present in sodium vapor lights, fluorescent lights, incandescent lights, thermostats, switches, magnahelics and other instrumentation. Barium is present in leaded glass and tank sludge. Chrome is present in FBI equipment and oil. Cadmium is present in sludge and oil in FBI tanks. Silver is present in tank sludge.</p> <p><u>B730</u> - None identified.</p>
PCBs	<p><u>B776/777</u> - PCBs are present or potentially present in fluorescent light fixtures, capacitors, oils, chlorinated solvents, and paint.</p> <p><u>B730</u> - None identified.</p>
SNM Holdup	<p><u>B776/777</u> - SNM holdup is present in Zone I and IA ventilation systems and GBs.</p> <p><u>B730</u> - None identified.</p>
Chemicals	<p><u>B776/777</u> - Waste chemicals will be removed during deactivation. The exceptions are excluded chemicals and chemicals that will be used for decommissioning. Chemical solutions in tanks and piping will be sampled or characterized based on process knowledge during deactivation.</p> <p><u>B730</u> - None identified.</p>
Radioactive Sources	<p><u>B776/777</u> - Selective Alpha Air Monitors, Continuous Air Monitors, and radiological instrumentation needed on a daily basis are the sources that will be in the building during decommissioning.</p> <p><u>B730</u> - None identified.</p>

Source: Table 2 of the Building 776/777 Cluster Reconnaissance Level Characterization Report

* Survey results and maps identifying contamination locations are presented in the RLCR.

** Sample results are presented in the RLCR.

This page has been left blank due to classification issues.
Personnel with access to UCNI may obtain this information
from the Building 776/777 Closure Project Manager.

Figure 7. Ground-Penetrating Radar Survey Locations (Building 776/777)

future Site remediation. The area adjacent to the existing basement in Room 127 (Area E) was the largest equipment pit, which appears to be sealed (approximately 1,600 ft²). Based on the radar images, it appears no equipment or other material is buried in the area. The radar images also indicate that autoclaves are present beneath the Maintenance Carpenter Shop on the west side of Building 776 (Area F). Based on the drawings of this room, it appears the autoclaves are buried approximately 30 feet below grade.

It is believed the paint and solvent pit in Room 125 (SET 1), (Area G), and Room 133 (SET 2), (Area H), were filled to cover contamination. Since the pit in Room 125 is only eight inches deep and the pit in Room 133 is only 12 inches deep, it is believed equipment is not buried in these locations.

Another area in Room 127 (SET 68), (Area B), was investigated due to ongoing problems with the floor. During a maintenance job to repair the floor in late 1994, the concrete appeared soft. As the floor was scraped to remove paint, high levels of contamination developed along with a "puff" of air, and the maintenance crews encountered what they believed were metal plates. Based on the radar images of this area, there does not appear to be anything buried under the floor. However, the radar cannot penetrate a metal plate, so this area will be left as a suspect area of concern for planning purposes for future Site remediation.

4.3.3 In-Process Characterization

In-process characterization is required to prepare appropriate work authorization (WA) documents such as Radiological Work Permits (RWPs) required by the Site Radiological Control Manual (Ref. 11), and Activity Hazard Analyses (AHAs) required by the Integrated Work Control Program (IWCP) Manual (Ref. 12). Information collected for this purpose may also be used to further characterize the facility and provide background information for final building surveys.

In-process characterization is typically completed shortly before a work activity is initiated to ensure conditions have not changed since the planning stage. As work progresses and contaminants and hazards are eliminated, further characterization is completed to verify that contaminants and hazards have been removed to acceptable levels.

In-process characterization is based on process knowledge and field sampling and/or radiological surveys. Sampling and analysis activities are initiated through work packages for each SET prepared under the IWCP (see Section 5). Radiological surveys are routinely performed in radiological areas. Information collected during the RLC and pre-job walkdowns will be used to determine sampling and/or surveys requirements for each SET.

Recommended in-process characterization activities for Buildings 776/777 and 730 are presented in Table 4. The following paragraphs provide an overview of how in-process characterization will be performed for lead and other heavy metals, liquids, PCBs, asbestos, radiological contamination, and Be. Appendix A describes the specific characterization required for each SET, as well as the unique hazards that may be present in each SET.

Table 4. In-Process Characterization Required for Contamination and Hazards in Buildings 776/777 and 730

CONTAMINANT	HAZARDS
Radiological Contamination	<p><u>B776/777 - Building Structure:</u> In-process surveys are required to confirm the contamination levels. <u>Equipment:</u> In-process surveys and final equipment assays are required to determine if equipment will generate LLW or TRU waste, or if it can be free-released. <u>Process Tanks and Piping:</u> Process knowledge and in-process samples from solutions being drained from tanks and building systems during deactivation will confirm contamination levels within the piping and will be used to determine if additional information is needed to support decommissioning activities. <u>Electrical Panels & Conduit:</u> In-process characterization is required to confirm internal contamination levels. <u>Soil Contamination:</u> Environmental restoration personnel will assume responsibility for developing characterization plans for soil contamination. <u>Ventilation:</u> SNM holdup scans will be used to select decontamination/waste disposal methods for Zone I and IA ventilation systems. <u>Buried Equipment:</u> Contaminated equipment was buried in various locations under the floor after the 1969 fire; contamination levels are assumed to be $> 10^6$ cpm.</p> <p><u>B730 -</u> In-process surveys are required to confirm contamination levels.</p>
Be Contamination	<p><u>B776/777 -</u> In-process surveys are required to confirm Be contamination levels in storage, handling, and production areas.</p> <p><u>B730 -</u> In-process surveys are required to confirm Be contamination levels.</p>
ACM	<p><u>B776/777 -</u> In-process sampling may be required to determine if asbestos is present in roof tar and cement block insulation. Mapping will be used to determine if asbestos is present in ceiling and floor tiles. If materials cannot be mapped to known asbestos containing material, material will be sampled. Pipe and equipment insulation are assumed to contain asbestos; no additional sampling is required to determine if insulation contains asbestos.</p> <p><u>B730 -</u> No in-process surveys will be required.</p>
Lead & Other Heavy Metals	<p><u>B776/777 -</u> In-process sampling may be required to determine the presence of lead and other heavy metals in incinerator equipment and insulation. Sampling for lead and other heavy metals in paint may be required per guidance in Section 4.3.3.1. Sodium vapor, incandescent and fluorescent lights containing heavy metals will be managed as hazardous waste and do not require further sampling. Items known to contain lead and other heavy metals (i.e. leaded gloves) will be managed as hazardous waste, and no additional sampling is required.</p> <p><u>B730 -</u> No in-process surveys will be required.</p>
PCBs	<p><u>B776/777 -</u> Characterization may be required to determine if PCBs are present. If equipment is painted and is destined for distribution in commerce (for recycling or reuse) characterization for PCBs in the paint will be required. PCB liquids, PCB items, or others waste known to contain PCBs at greater than 50 parts per million (ppm) will be managed as PCB waste.</p> <p><u>B730 -</u> No in-process surveys will be required.</p>
SNM Holdup	<p><u>B776/777 -</u> No in-process sampling required in addition to the scans already planned to meet safeguards and security requirements for SNM removal.</p> <p><u>B730 -</u> No in-process surveys will be required.</p>
Chemicals	<p><u>B776/777 -</u> No in-process sampling is required. Most containerized chemicals will be removed during deactivation. Chemical solutions will be drained from tanks during deactivation. Newly discovered waste chemicals and/or those chemicals removed from excluded areas will be managed under the waste chemical program or as process waste, whichever is applicable.</p> <p><u>B730 -</u> No in-process surveys required.</p>
Radioactive Sources	<p><u>B776/777 and B730 -</u> No in-process characterization will be required.</p>

Source: Table 6 of the Building 776/777 Reconnaissance Level Characterization Report

4.3.3.1 *Lead and Other Heavy Metals*

Lead and other heavy metals are present or potentially present throughout Building 776/777 in paint and in various equipment and insulation. Analysis for lead and other heavy metals in paint is not required in some cases. Available data from RFETS allows characterization of the non-radioactive lead based paint (LBP) debris generated in Building 776/777 as non-hazardous under RCRA, and amenable to disposal as sanitary waste per RFETS guidelines. However, as a best management practice, workers in the Building 776/777 Cluster will assume the debris contains lead unless either process knowledge (e.g., paint color) or analytical data (e.g., X-ray fluorescence, lead paint detector swabs) establish it is not a hazard to worker health.

Similarly, LBP debris in radioactive areas may be managed as LLW or TRU waste (i.e., non-mixed waste), except for high contamination areas where lead paint may have been liberally used as a fixative for radiological contamination. Paint debris from thickly painted high contamination areas will be managed RCRA hazardous LBP debris (i.e., LLM or TRM waste) unless total lead or Toxicity Characteristic Leaching Procedure (TCLP) measurements on a representative core of material establish the material is not RCRA hazardous waste.

Equipment known to contain lead or other heavy metals will be managed as hazardous waste and not sampled. The FBI insulation and equipment will be sampled for chromium. A chromium-based catalyst that was used in the FBI process has been removed, but there are visible stains from the catalyst on the insulation.

4.3.3.2 *Liquids*

Organic liquids drained from process systems will be characterized by process knowledge or sampled and analyzed for RCRA D-codes and F-listed solvents, TCLP organic constituents, pH, heavy metals, flashpoint, and PCBs, as appropriate. This data will generally be collected during deactivation in preparation for decommissioning.

Aqueous liquids drained from process and utility systems will be sampled in accordance with the requirements of the approved disposal facility. Liquids will be managed in accordance with RCRA/CHWA and associated implementing regulations.

4.3.3.3 *Polychlorinated Biphenyls*

In most cases, the location of PCBs was documented during the RLC. However, during decommissioning, PCBs may be found in fluorescent light fixture ballasts, capacitors, and paint. Ballasts and capacitors will be managed as PCBs if they are not specifically marked with the label "No PCBs." Intact ballasts that contain PCBs will be managed as "PCB bulk product waste" as defined by Toxic Substances Control Act (TSCA), (Ref. 13), and capacitors containing PCBs will be managed as "PCB items" as defined by TSCA.

PCBs in applied dried paint are considered PCB bulk product waste as defined by TSCA. Generally, under TSCA regulations, characterization for PCBs in applied dried paint is not required to enable disposal. The regulations permit the disposal of certain PCB bulk product waste, including applied dried paints, in a permitted solid waste landfill regardless of the PCB concentration, provided proper notification is given to the facility.

However, painted equipment that is destined for recycle or reuse and has a significant recovery value must be characterized for PCBs to meet TSCA requirements for distribution into commerce. If the PCB concentration in the paint on the equipment exceeds 50 ppm, the equipment must be decontaminated before being reintroduced into commerce. The decision to reintroduce the equipment into commerce or to dispose of the equipment is based primarily on a comparison of the cost to decontaminate the equipment versus the recovery value of the equipment. If the cost of decontamination exceeds the recovery value of the equipment, the equipment will be disposed of in a solid waste landfill in accordance with TSCA requirements, without the need to characterize the PCB concentration in the paint. Additional details on decontamination requirements related to the management of PCB bulk product waste are provided in the Environmental Leadership Team Environmental/Waste Compliance Guidance No. 25, entitled "Management of Polychlorinated Biphenyls (PCBs) in Paint and Other Bulk Product Waste During Facility Disposition" (Ref. 14).

4.3.3.4 Sampling and Analysis Methodology for Lead and Other Heavy Metals, PCBs, and Solvents

A request for sampling and analysis is made to the Analytical Projects organization using a sampling and analysis request form. Sampling and analysis methodologies are determined by the Analytical Projects organization and based on the most recent Occupational Safety & Health Administration (OSHA), National Institute of Occupational Safety and Health (NIOSH), and EPA procedures, as appropriate.

4.3.3.5 Asbestos Containing Material

Whenever possible, flooring, ceiling tiles, mastic under tile and carpet, and roof tar will be characterized by a "mapping" process, which consists of an examination of asbestos sample results of material from one area, and the application of those results to similar material in another area. Additional samples will be collected if mapping cannot provide sufficient information.

The pipe insulation in Building 776/777 was burned during the 1969 fire or removed during decontamination and replaced with asbestos insulation. Therefore, insulation in the facility will be managed as asbestos waste. No further sampling is required to determine if the insulation contains asbestos.

Most walls in the facility have been characterized based on construction drawings and physical walkdowns to verify materials. Transit walls will be managed as asbestos waste. In addition, asbestos has been found in the cement brick insulation in other buildings across the Site. Samples of cement brick insulation in Building 776/777 will be analyzed to determine if asbestos is present in the insulation.

In-process characterization for asbestos will be conducted using approved Site procedures based on CDPHE requirements.

4.3.3.6 Radiological Contamination

Radiological surveys will be conducted on equipment, waste, and structures throughout the decommissioning process. These in-process surveys will be performed in accordance with approved radiological safety procedures based on the current version of the RFETS Radiological Control Manual (Ref. 11). Radiological surveys on equipment and waste are required to determine disposal paths. Structures will be surveyed for removable and total contamination. In addition, volumetric and/or surface media samples may be obtained to further characterize the structures.

4.3.3.7 Beryllium Contamination

Areas where Be operations were performed have been documented in the RLCR. In-process characterization will be conducted in accordance with the Chronic Beryllium Disease Prevention Program (CBDPP), (Ref. 15).

4.4 Building and Equipment Cleanup Levels

The following paragraphs identify the cleanup criteria that will be used to determine when materials, media, equipment, floors, walls, and ceilings within the Building 776/777 Cluster may be considered non-radioactive, non-hazardous, non-Be contaminated, non-TSCA, and non-ACM, then either free-released or managed as sanitary waste. These release criteria are taken from the DDCP (Ref. 3), which describes the requirements for characterizing the radiological and chemical hazards associated with buildings and facilities. The release criteria are summarized in Table 5. Except where pre-empted by new statutory, regulatory, and/or Site requirements, the release criteria will be used to disposition waste during decommissioning.

4.4.1 Radionuclides

When radiological contamination is identified, 10 CFR 835 (Ref. 16) and DOE Order 5400.5 (Ref. 17) will be followed to ensure protection of workers, the public, and the environment. Radiological characterization measurements will be collected and interpreted in accordance with the DDCP and associated Pre-Demolition Survey Plan (Ref. 18). If all radiological characterization measurements are below the Allowable Total Residual Surface Contamination (ATRSC) thresholds provided in Figure IV-1 of DOE Order 5400.5 (and summarized in Table 5), the related area or volume of material is considered sanitary waste and may be free-released.

4.4.2 Hazardous Waste

If waste is mixed with or contains a listed hazardous waste, or if the waste exhibits a characteristic of a hazardous waste, it is considered hazardous waste in accordance with 6 CCR 1007-3, Part 261, Identification and Listing of Hazardous Waste (Ref. 19). Otherwise, the waste is considered non-hazardous.

If the waste is hazardous waste, it will be disposed of in compliance with 40 CFR Part 268, Land Disposal Restrictions (LDRs), (Ref. 20), and in conformance with the disposal facility's WAC.

Table 5. Release Criteria

Contaminant	Regulatory Driver	Free-Release Threshold		
Radionuclides ^d - values are above background concentrations in dpm/100 cm ^{2b}		Total Average ^{c, d}	Total Maximum ^{d,e}	Removable ^{d,f}
Transuranics	DOE Order 5400.5	100	300	20
Th-Natural		1000	3000	200
U-Natural		5000	15000	1000
Beta-Gamma emitters ^g		5000	15000	1000
Tritium		N/A	N/A	10000
RCRA Waste	6 CCR 1007-3, Part 261	No listed hazardous waste or characteristic hazardous waste is present		
Beryllium	RFETS Chronic Beryllium Disease Prevention Program (CBDPP)	Loose surface contamination concentrations are less than 0.2ug/100 cm ²		
PCB Bulk Remediation Waste	40 CFR 761.61 (Federal Register, Vol. 63, No. 124, June 29, 1998)	≤1 ppm (high occupancy areas)		
ACM	5 CCR-1001-10, Regulation No. 8	No sample in a sample set representing a homogeneous medium results in a positive detection (i.e., > 12% by volume)		

Notes:

- a Where surface contamination by both alpha- and beta-gamma emitting radionuclides exists, the limits established for alpha- and beta-gamma-emitting radionuclides should apply independently.
- b As used in this table, dpm (disintegrations per minute) means the rate of emission by radioactive material as determined by correcting the counts per minute measured by an appropriate detector for background efficiency, and geometric factors associated with the instrumentation.
- c Measurements of average contamination should not be averaged over an area of more than 1 m². For objects of less surface area, the average should be derived for each such object.
- d The average and maximum does rates associated with surface contamination resulting from beta-gamma emitters should not exceed 0.2 mrad/hour and 1.0 mrad/hour, respectively, at 1 cm.
- e The maximum contamination level applies to an area of not more than 100 cm².
- f The amount of removable material per 100 cm² of surface area should be determined by wiping an area of that size with dry filter or soft absorbent paper, applying moderate pressure, and measuring the amount of radioactive material on the wiping with an appropriate instrument of known efficiency. When removable contamination on objects of surface area less than 100 cm² is determined, the activity per unit area should be based on the actual area and the entire surface should be wiped. It is not necessary to use wiping techniques to measure removable contamination levels if direct scan surveys indicate that the total residual surface contamination levels are within the limits for removable contamination.
- g This category of radionuclides includes mixed fission products, including the Sr-90 which is present in them. It does not apply to Sr-90 which has been separated from the other fission products or mixtures where the Sr-90 has been enriched.

4.4.3 Beryllium Contamination

If Be contamination is detected in the form Be powder, the contaminated material will be handled as a hazardous waste (EPA Code P015), subject to treatment standards under 40 CFR 268.40 or alternate release criteria will be proposed based on surveys and available information.

If loose surface contamination concentrations of Be exceed the action level for equipment release defined in Section 28 of the RFETS Occupational Safety & Industrial Hygiene Program Manual, the contaminated material will be managed under the RFETS Chronic Beryllium Disease Prevention Program (CBDPP), (Ref. 15).

4.4.4 Polychlorinated Biphenyls

If a material meets the definition of "PCB bulk product waste," it may be disposed of as TSCA waste at a permitted solid waste disposal facility without further characterization. If the disposal facility is not an approved commercial PCB storage or disposal facility, the generator must provide written notification to the facility in accordance with 40 CFR 762.62.

If a material meets the definition of "PCB remediation waste" (i.e., potentially containing PCBs from historical releases), the free-release concentration is 1 ppm PCBs for high-occupancy areas, as determined in accordance with the requirements of 40 CFR 761.61, Subpart G. Higher release levels for PCB remediation waste are permissible, but carry specific restrictions on how the material may be dispositioned.

4.4.5 Asbestos Containing Material

ACM will be managed in compliance with 5 CCR-1001-10, Regulation No. 8. If any one sample of a sample set representing a homogeneous medium results in a positive detection (i.e., > 1% by volume), the material is considered ACM; otherwise the material is considered non-ACM.

ACM that is friable or will be made friable during demolition activities will be removed prior to demolition. An asbestos removal action will be considered complete when, based on five air samples ($\geq 1,199$ liters/sample for a 25 millimeter filter or $\geq 2,799$ liters/sample for a 37 millimeter filter), the average concentration of asbestos, as analyzed by transmission electron microscopy, does not exceed 70 asbestos fibers/mm².

4.5 Closure of RCRA-Regulated Units

RCRA-regulated units located within the Building 776/777 Cluster will be closed in compliance with the closure performance standards described in this section. Table 6 presents a list of the RCRA-regulated units in the Building 776/777 Cluster, including unit number and associated SET number, location, permit status, the type of closure currently planned for each unit.

Closure activities for RCRA-regulated units located in the basement of Building 776/777 will begin during deactivation and continue through decommissioning. Details concerning the disposition of the basement foundation/slab(s) will be provided in the demolition modification to this DOP, which will be submitted for a public comment period equivalent to that for the initial Building 776/777 DOP.

4.5.1 Closure Options

Closure may be conducted in two stages: first by rendering a unit or portion of a unit "RCRA stable" (if a permitted or interim status unit) or "physically empty" (if a mixed residue unit), then by completing the activities associated with the closure options described below.

Table 6. Building 776/777 RCRA-Regulated Units

Room	RCRA Unit	SET	Description	Status	Proposed Closure Ø
134	776.1	67	Container Storage Area	Permitted	RCRA Stable/Removal
134 (ASRF)	776.1	66	Container Storage Area (ASRF)	Permitted	RCRA Stable/Removal
154	776.1	54	Container Storage Area	Permitted	RCRA Stable/Removal
159	776.1	57	Container Storage Area	Permitted	RCRA Stable/Removal
237	776.1	70	Container Storage Area	Permitted	RCRA Stable/ Removal
208	776.1	70	Container Storage Area	Permitted	RCRA Stable/ Removal
127	776.1	68	Container Storage Area	Permitted	RCRA Stable/Removal
127	776.2C	69	Process Waste Tank T-2A	Permitted	RCRA Stable/Removal
127	776.2D	69	Process Waste Tank T-2B	Permitted	RCRA Stable/Removal
127	776.2A	69	Process Waste Tank T-1A	Permitted	RCRA Stable/Removal
127	776.2B	69	Process Waste Tank T-1B	Permitted	RCRA Stable/Removal
134	776.3	66	ASRF (Treatment)	Permitted	RCRA Stable/Removal
118	44.01	62	Oil Storage Tank T-2	Interim Status*	RCRA Stable/Removal
118	44.02	62	Oil Storage Tank T-1	Interim Status *	RCRA Stable/ Removal
118	49.01	63	FBI Production Unit (Treatment)	Interim Status	RCRA Stable/ Removal
135	49.02	61	FBI Pilot Unit (Treatment), including Tanks T-1 & T-2	Interim Status*	RCRA Stable/ Removal
146	61	60	SRV (Storage)	Interim Status	RCRA Stable/ Removal
146	61	60	SRV (Treatment)	Interim Status	RCRA Stable/ Removal
134	74	64	SARF	Interim Status	RCRA Stable/ Removal
152	90.85	53	Container Storage (Vault)	Mixed Residue	RCRA Stable/ Removal
1	90.99	68	Container Storage (Basement)	Mixed Residue ⊕	RCRA Stable/ Removal
134	94.001	55	Tank SRV-3	Mixed Residue ⊕	Physically Empty/ Removal
134	94.002	55	Tank SRV-4	Mixed Residue ⊕	Physically Empty/ Removal
134	94.003	55	Tank SRV-5	Mixed Residue ⊕	Physically Empty/ Removal
134	94.005	66	Tank T-344	Mixed Residue ⊕	Physically Empty/ Removal
134	94.006	66	Tank T-345	Mixed Residue ⊕	Physically Empty/ Removal
134	94.007	52	Tank T-360	Mixed Residue ⊕	Physically Empty/ Removal
134	94.008	52	Tank T-370	Mixed Residue ⊕	Physically Empty/ Removal
146	94.009	60	Ball Mill Washer (Treatment)	Mixed Residue ⊕	Physically Empty/Removal
146	94.010	60	Collection Pan	Mixed Residue ⊕	Physically Empty/Removal
146	94.011	60	Annular Tank	Mixed Residue ⊕	Physically Empty/ Removal

Room	RCRA Unit	SET	Description	Status	Proposed Closure Ø
432C	777.1	27	Container Storage	Permitted	RCRA Stable/Removal
430 (3)	777.1	25	Container Storage	Permitted	RCRA Stable/Removal
430 (2)	777.1	25	Container Storage	Permitted	RCRA Stable/Removal
483 (8)	777.1	47	Container Storage	Permitted	RCRA Stable/Removal
433	777.1	31	Container Storage	Permitted	RCRA Stable/Removal
208	777.1	70	Container Storage	Permitted	RCRA Stable/ Removal
448	777.1	32	Container Storage (NDT)	Permitted	RCRA Stable/Removal
430	95.015	26	Tank T-1	Mixed Residue ⊕	Physically Empty/ Removal
430	95.016	26	Tank T-2	Mixed Residue ⊕	Physically Empty/ Removal
131	90.49	8	Container Storage	Mixed Residue ⊕	RCRA Stable/ Removal
131	95.006	7	Tank 1103	Mixed Residue ⊕	RCRA Stable/Removal
131	95.007	7	Tank 1104	Mixed Residue ⊕	RCRA Stable/ Removal
131	95.008	7	Tank 1106	Mixed Residue ⊕	RCRA Stable/ Removal
134E	95.014	11	Tank T-7	Mixed Residue ⊕	RCRA Stable/ Removal
131	N/A	4	Tank DL-776	Mixed Residue ⊕	Physically Empty/ Removal
131	N/A	4	Tanks V-605 (2)	Mixed Residue ⊕	Physically Empty/ Removal
131	N/A	5	Tank V-614	Mixed Residue ⊕	Physically Empty/ Removal
131	N/A	5	Tank V-616	Mixed Residue ⊕	Physically Empty/ Removal
131	N/A	5	Tank V-618	Mixed Residue ⊕	Physically Empty/ Removal
131	N/A	5	Tank V-620	Mixed Residue ⊕	Physically Empty/ Removal
131	N/A	6	Tank V-626	Mixed Residue ⊕	Physically Empty/ Removal
131	N/A	6	Tank V-627	Mixed Residue ⊕	Physically Empty/ Removal
452	N/A	34	Tank V-022	Mixed Residue ⊕	Physically Empty/ Removal
452	N/A	36	Tank V-543	Mixed Residue ⊕	Physically Empty/ Removal
134E	N/A	11	Tank V-746	Mixed Residue ⊕	Physically Empty/ Removal
134E	N/A	11	Tank V-747	Mixed Residue ⊕	Physically Empty/ Removal
134E	N/A	11	Tank V-748	Mixed Residue ⊕	Physically Empty/ Removal
134E	N/A	11	Tank V-749	Mixed Residue ⊕	Physically Empty/ Removal
134E	N/A	10	Tank V-752	Mixed Residue ⊕	Physically Empty/ Removal

* Interim status tank Units 44.01, 44.02, and 49.02 are governed by the terms and conditions of a Compliance Order on Consent and the Hazardous Waste Tank Management Plan (HWTMP), which required the tanks to be taken to a RCRA Stable status by March 31, 1998. This commitment was met.

⊕ Mixed residue tanks managed in accordance with the Mixed Residue Tank Plan (see Section 6.2.4).

Ø The type of closure for a unit may change from the type of closure listed; however, all closures will be conducted in accordance with this DOP.

N/A Mixed residue tank does not have a RCRA unit number.

4.5.1.1 *Clean Closure*

RCRA-regulated units may be "clean closed" either by documenting the absence of contamination or by decontaminating the unit. For units having a complete, detailed operating history, clean closure will be demonstrated when the following criteria are met:

- An administrative review of the RCRA Operating Record indicates hazardous or mixed waste was never spilled in the unit, or if a spill did occur, it was cleaned up and the spill area was decontaminated; and
- A visual inspection of the unit and associated ancillary equipment notes an absence of hazardous or mixed waste stains and/or residuals.

Units to be "clean closed" by decontamination will be flushed and washed with a suitable decontamination solution to remove visible waste residuals and contaminants of concern, then rinsed with clean water. The final rinsate will be tested to determine whether:

- The pH of the rinsate is between 6 and 9, and
- The concentrations of priority pollutants and heavy metals identified as being managed in the unit are below the Tier II action levels for ground water defined in Attachment 5 of RFCA [Ref. 1], and listed in Appendix B). Rinsate meeting the Tier II action levels for listed waste constituents associated with the unit and the LDR standards for characteristic waste will be deemed to be "no longer contained in" and will be managed as LLW.

For external surfaces, the final rinsate will not exceed a volume of two gallons per 100 ft² of surface area rinsed, and for internal surfaces, the final rinsate will not exceed a volume of 5% of the capacity of the tank system. If test results indicate the standard has been met, the unit equipment will be considered "clean closed." In the event the standard is not met, the LRA will be consulted to determine whether the results are protective of human health and the environment.

4.5.1.2 *Unit Removal in Conjunction with "Debris Rule" Treatment*

Alternatively, RCRA-regulated units may be closed by removal and treatment under the "debris rule." The "debris rule" applies to unit equipment or structures that have no intended use or reuse, and are slated for removal and discard. To meet the "debris rule" standard, decontamination will be conducted using the "abrasive blasting" physical extraction technology, or other appropriate technology identified in Part 268.45 of 6 CCR 1007-3 (Table 1, Alternative Treatment Standards for Hazardous Debris).

If, after "debris rule" treatment, the equipment or structure meets the standard for a "clean debris surface," and it does not exhibit a hazardous waste characteristic, it will no longer be considered a hazardous waste and will be managed as a solid waste.

In the event the standard is not met, the equipment or structure will be removed and managed as hazardous or mixed waste. Treatment residuals generated from extraction and/or destruction technologies used in the closure of units in the Building 777/776 Cluster (including rinsates) will be characterized in compliance with 6 CCR 1007-3, Part 262.11, and managed accordingly. Treatment residuals do not meet the definition of debris.

4.5.1.3 Unit Removal without Onsite Treatment

Unit equipment or structures that are not decontaminated to meet either the "clean closure by decontamination" or "debris rule" standard will be removed, size-reduced (if necessary), and packaged to meet the waste acceptance criteria (WAC) of the approved disposal facility. In the event this waste cannot be shipped directly to a disposal facility, it will be stored in an approved on-Site storage unit until shipment can be scheduled.

4.5.2 Closure Documentation

Prior to the decommissioning of each SET, RCRA unit-specific closure information will be submitted to the LRA for review and approval as a minor modification to this DOP under ¶127 of RFCA. The unit-specific information will include drawings and/or photographs of the RCRA-regulated unit or units in the SET, applicable EPA Waste Codes, the selected closure option(s), and closure requirements.

A description of the closure activities completed for each RCRA-regulated unit will be included in the Final Closeout Report, which will be prepared for the Building 776/777 Closure Project upon completion of decommissioning activities. All RCRA units will be closed prior to building demolition.

4.6 Pre-Demolition Survey

A pre-demolition survey will be conducted to identify areas requiring additional decontamination before the building is demolished. The pre-demolition survey will be performed on an on-going basis in areas that have been stripped out and released for final survey to verify the waste disposal path for building rubble. Per ¶60(a) of RFCA, the LRA may take samples and obtain duplicate, split, or sub-samples of any DOE samples.

The pre-demolition survey will be conducted in accordance with the Pre-Demolition Survey Plan, which will be prepared in conformance with the DDCP (Ref. 3) prior to the initiation of demolition activities. The Pre-Demolition Survey Plan will be submitted to the LRA for review and approval. A Pre-Demolition Survey Report will be prepared to document the results of the pre-demolition survey and included in the Project's administrative record (AR). Per Sections 3.3.10 through 3.3.13 of the DPP, the Pre-Demolition Survey Report will be forwarded to the LRA for review.

4.7 Independent Verification

An independent party, selected by DOE, will perform a verification assessment of the final survey methodology. This assessment will include a review of survey procedures, survey instrument calibration and operation procedures, and the Pre-Demolition Survey Plan. Also, the independent party may obtain additional survey measurements for comparison with the RFETS measurements to ensure proper correlation of survey data.

4.8 Endpoints

Once the characterization walkdowns were completed, detailed endpoints were developed for each SET. The endpoints determine the completion criteria for the SETs. Distinct activities required to deactivate, isolate and contain, dismantle, size reduce, and package waste for off-site shipment are included as endpoints. Although the endpoints were developed based on walkdowns, it is expected additional work will be discovered during decommissioning. The scope of work and associated endpoints will be adjusted as items are identified. The endpoints are intended to provide the basis for the activities and activity line items in the Work Breakdown Structure (WBS) and milestones on the project schedules. The endpoints are divided into three categories: deactivation, decommissioning, and project management. Appendix A contains a master list of decommissioning endpoints for each SET. Documentation of the endpoints ensures all parties understand what is involved in the decommissioning phase of the SET, and activities are signed off as they are completed as part of the IWCP process (see Section 5) to document that applicable criteria have been met. The endpoints or milestones listed in this DOP are provided for information only.

4.9 Size Reduction Methodologies

In Building 776/777, size reduction activities will involve 279 GBs, connecting stations, and centerlines, along with 44 tanks. The GBs and tanks are connected to the Zone I ventilation systems totaling several miles of ductwork and piping. The GBs are stainless steel enclosures with window mountings, glove port rings, bolted flanges, and various penetrations attached to the walls. The tanks range from five inches to a few feet in diameter and up to a few feet long. These vessels were fabricated in both single-wall and double-wall configurations. Zone I exhaust systems are made up of 6-inch to 36-inch diameter stainless steel ductwork and walk-in plenums containing HEPA filters.

For disposal, the GBs, tanks, and ventilation system hardware must be reduced in size to fit into waste containers for disposal. The primary containers for TRU waste are Waste Isolation Pilot Plant (WIPP) standard waste boxes (SWBs) and 55-gallon drums. During size reduction, items are cut into pieces that can be stacked efficiently in the waste containers.

A value engineering study performed by the Technology Steering Committee in July of 1998 evaluated a variety of size reduction techniques that may be used on equipment and GB systems in the Building 776/777 Cluster (Ref. 20). Results of this study are summarized in Table 7. The selected methods will depend on the individual areas and the type and location of equipment to be size reduced. In some cases, the preferred method may not be used due to safety constraints, such as criticality evaluations or area specific limitations in the Building 776/77 AB. Cutting methods will be finalized for each SET as the detailed IWCP work packages are developed. Due to the requirement to operate within a controlled work environment at Rocky Flats, changes in the methods to accomplish size reduction goals will be implemented using a phased approach. Certain methods (e.g., thermal cutting) have been recommended for use inside hard-sided containment. The following types of hard-sided containment are being considered for use: a new system in Room 121, the existing ASRF in Room 134, portable containment (i.e., bolt together),

Table 7. Proposed Size Reduction Techniques

Methods	Small Tools	Plasma Arc	Oxy-torch	Laser Cutter	Diamond Wire Saw	Wachs Cutter	Hydraulic Shears	Shear Baler	Water with Abrasives	Upgrade ASRF	ASRF	Arc Saw	Arc Air Slice	Arbor Press
Footnotes	1	A,R,H,F	A,R,H,F	A,H	C,R,S	P	R		A,C,S,H			A,H,F	A,H,F	
GBs														
Stainless with lead shielding	3	1		2	3		1	1	1	1	1	1	1	1
Stainless without lead shielding	2	1		2	3		3			1	1	1	1	1
Plexiglas with lead shielding	1						3							
Plexiglas with lead shielding	1									1	1			
Glass	1									1	1			
Lead	1									1	1			1
Gloves	1									1	1			
Filters	1									1	1			
GB supports	2	1	1	1		1	2		2			3	1	
Shielding														
Benelex	1													
Plexiglas	1													
Machinery														
Tool Steel														
< 1/2"	3	1	1	2	3				1	1	1	1	1	
> 1/2" but < 3"	3	1	1		3				1	1	1	1	1	
> 3"	3	1	1		3				3	1	1	1	1	
Cast iron		1		2	3				2	1	1	1	1	
Carbon steel equipment bases		1	1	2	3				2	1	1	1	1	
Aluminum	2	2		1	3		1	1	1	1	1	1	1	1
Stainless steel > 3/8" but < 1"	3	1		3	3				1	1	1	1	1	
Granite	2		2		1				1				2	

LEGEND: Blank = Not applicable

1 = Most preferred method
2 = Medium preferred method
3 = Least preferred method

= Can be automated
= Can utilize remote control
= Needs hard-sided containment
= Fumes need to be dealt with

C = Possible criticality issue
S = Secondary waste issue
I = Includes use for disassembly
P = Applies to pipe only

and a centralized size reduction facility. The graded approach to size reduction is summarized as follows:

- Develop a hard-side/soft-side containment that does not require supplied breathing air on a continuous basis and tooling that reduces handling fatigue.
- Develop a remotely operated size reduction system within hard-sided containment to remove the operator from the actual size reduction activities (e.g., cutting, packaging) and improve throughput of a single size reduction system. The safety goal is to completely remove the human operator from actual size reduction activities.

Both these approaches to size reduction in the Building 776/777 Cluster will incorporate technology improvements associated with an enhanced walk-in hard-sided containment system to reduce or eliminate Class "A" PPE. Technology improvements are primarily limited to currently proven and available equipment and processes. This will provide technology that will be available to meet existing goals for size reduction tasks in Building 776/777. The Technology Steering Committee will continue to work on the identified needs and define future improvements for RFETS decommissioning activities. In addition, the committee will provide guidance on integrating currently funded activities into Site closure projects and program.

4.10 Decontamination Approach

Material and equipment located in the Building 776/777 Cluster must be dispositioned into various categories of excess equipment and waste. During FY00 an Economic Disposal Plan will be developed in accordance with 1-MAN-009-PM, Property Management Manual (Ref. 21). As illustrated in Figure 8, this logic is used to determine if a material is waste or property, and if it may be readily free-released as uncontaminated and non-hazardous material. If it is radioactive and/or hazardous waste, the material must be evaluated for whether, after packaging, it is TRU, TRM, LLW, or LLM waste. If it is TRU or TRM waste, the effort to be expended for decontamination and volume reduction to optimize its final configuration must be determined and documented. Once segregated, characterized, and packaged, the waste will be disposed of based on RFETS waste management requirements.

A recent study, entitled "Evaluation of Potential Cost Impacts from Volume Reduction and Decontamination for TRU Contaminated Systems and Equipment," (Ref. 22), provided the following conclusions on the economics of volume reduction and decontamination. First, for most systems, volume reducing to increase the average density of the filled waste containers provides insufficient waste management cost savings to justify the additional labor needed to cut items into smaller pieces to achieve the higher density. Second, decontaminating TRU-contaminated systems and equipment to LLW also does not appear to be cost effective for most systems. Finally, schedule delay costs add to the cost of decontamination or additional volume reduction and can be much larger than any other factor. An analysis of Building 779 Closure Project revealed the cost impacts due to schedule delays. A schedule slip of one day resulted in a cost increase of up to \$85,000, which is the current rate of spending for the Building 776/777 Closure Project. Schedule delays in the decommissioning of other Pu buildings could run two to three times this amount. Schedule delay costs can dominate the economics of decommissioning for those systems on the critical path to a

building's closure. For these systems, the most straightforward method of removal and disposition will be chosen.

The following paragraphs describe the techniques most likely to be used if equipment and surfaces must be decontaminated. These techniques are listed in the Building 776/777 Complex Basis for Interim Operation (BIO), (Ref. 23). Techniques not currently authorized by the BIO may be introduced through an IWCP work package (Ref. 12), then evaluated by the Unreviewed Safety Question Determination (USQD) process (Ref. 24) prior to implementation.

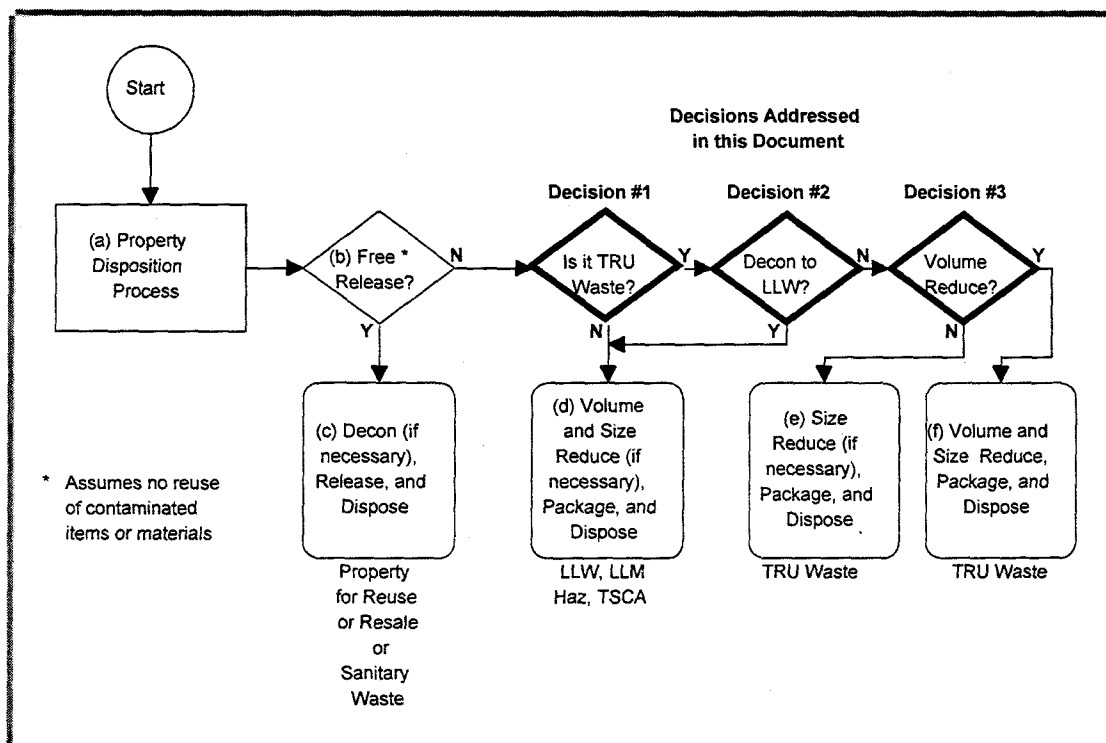


Figure 8. Waste Decision Logic

4.10.1 Dusting, Wiping, and Scrubbing

Dusting, wiping, and scrubbing involve the physical removal of dust and fine particles from building and equipment surfaces using common cleaning techniques. Typically, dusting is a dry technique where a dry cloth is used. Wiping involves the use of a damp cloth, which may be soaked with water, detergent, or solvent to assist in removing particulates. Scrubbing is similar to dusting and wiping except that pressure is applied to assist in removing the contamination.

4.10.2 Vacuuming

Vacuuming involves the physical removal of dust, particulates, and liquids with a suction device. Dust and particulates are removed using a commercial or industrial grade vacuum equipped with a

HEPA filter. Liquids are removed using a "wet vacuum" equipped with an alternate filter system, because HEPA filters do not function properly with liquids.

4.10.3 Strippable Coatings

Strippable coatings may be applied to contaminated surfaces, then removed along with some of the contamination. Various agents can be used as strippable coatings for contaminated surfaces. Decontamination factors for the strippable coatings vary with the type of coating used. In general, strippable coating decontamination is only effective on smooth, non-porous surfaces.

Strippable coatings are applied using a mixture of two polymers that chemically react to form the coating. Usually, the contaminated layer is pulled off, containerized, and disposed of as contaminated waste. The polymers used in the mixture are often hazardous materials. Care must be taken when collecting the coatings to assure the quantities of radioactive material do not exceed the packaging requirements. The two strippable coatings being considered are identified in Table 8.

Table 8. Strippable Coatings

Coating Mixture	Coating Reaction
Polymer mixture	In the polymer mixture, contaminants are entrained in the mixture as the polymer reacts then stabilizes. The contaminated layer of polymer is pulled off, containerized, and disposed of as radioactive waste.
Nontoxic, water-based copolymer	The nontoxic, water-based copolymer is considered self-stripping because as the formula polymerizes, it cracks, flakes, and falls off, taking the loose surface material with it. The loose flakes are containerized with no additional processing prior to disposal.
Note: Combustible strippable coatings have not been considered.	

4.10.4 Fixative Coatings

Various agents may be used as coatings on contaminated surfaces to fix the contaminants in place and decrease or eliminate exposure hazards. The fixed contaminants are left in place to reduce potential spreading during other phases of closure. Fixatives will be used on a case-by-case basis, as identified during preparation of individual IWCP work packages.

One fixative coating technique that may be used involves a two-step process. An initial capture coating is applied using a misting technique. The capture-coating mist is similar to a gas and removes airborne contamination from the application area. The capture coating eventually settles onto exposed surfaces and becomes tacky. A second, durable coating is then applied using a mixture of two compounds that chemically react to form the coating. The two compounds have hazardous material classifications. One compound reacts violently with water and the other reacts violently with acids. Upon decomposition, either may emit noxious gases.

4.10.5 Scarifiers

Scarifiers physically abrade both coated and uncoated concrete and steel surfaces. The scarification process removes the top layers of contaminated surfaces to reach the sound, uncontaminated surfaces. For steel surfaces, scarifiers can completely remove contaminated coating systems, including mill scale. This leaves a surface of bare metal. A scabbling scarification process may be used to achieve the desired profile and results for contaminated concrete. A needle-scaling scarification process may be used for steel decontamination. Vacuum attachments may be used to reduce the spread of contamination associated with the scarification process.

4.10.6 Paving Breakers and Chipping Hammers

Paving breakers and chipping hammers are used to physically remove contamination and surface material by mechanical impact. Although paving breakers and chipping hammers are primarily used in demolition activities, they may also be used to remove surface contamination up to six inches thick, resulting in a rough remaining surface.

4.10.7 Grit Blasting

Grit blasting, also referred to as sand blasting or abrasive jetting, uses abrasive materials suspended in a medium (e.g., compressed air, water, or a combination of air and water) to pulverize and grind out surface contaminants. Typically, blasting results in a uniform abrasion of the surface. Typical abrasives include minerals, steel pellets, glass beads, glass frit, plastic pellets, and natural products, such as sand. A grit blasting system consists of a blast gun, pressure lines, abrasives, and an air compressor. Grit blasting systems are usually hand-held; however, remotely operated units are available.

4.10.8 Carbon Dioxide Blasting

Carbon dioxide (CO₂) blasting is a variation of grit blasting in which CO₂ pellets are used as the abrasive medium. Small CO₂ pellets accelerate through a nozzle using compressed air, shattering when they impact the surface. The resulting kinetic energy causes the shattered pellets to penetrate the base material and release the contaminant(s). The CO₂ fragments immediately sublime, which adds a lifting force that aids in removal of the contaminant(s). Abraded debris falls to the ground, and the CO₂ (now a gas) returns to the atmosphere. The CO₂ blasting is effective with plastics, ceramics, composites, and stainless steel. This technique may not be effective on hard coatings that are firmly bonded to the base material.

4.10.9 Chemical Decontamination

Chemical reagents are widely used in the nuclear industry for decontamination. A major advantage of chemical decontamination is the production of few airborne hazards. Other advantages of chemical decontamination include:

- Use on inaccessible surfaces,
- Fewer work hours required,
- Process equipment and piping may be decontaminated in place, and

- Decontamination may be performed remotely.

Disadvantages include:

- Generation of large volumes of radioactive mixed waste, and
- Storage and collection concerns.

4.11 Building 776/777 Decommissioning

Building 776/777 will be decommissioned using a phased approach. The following paragraphs summarize the decommissioning activities that will be conducted to prepare the building for demolition. Demolition will proceed in accordance with a subsequent decision document(s), which may include a modification to this DOP.

4.11.1 Expected Condition of Building 776/777 at Beginning of Decommissioning

By the time decommissioning begins in Building 776/777, the majority of SETs will be deactivated and a few SETs will still be in a normal operating mode. Typically, in a deactivated SET, all classified material, loose combustibles, and hazardous materials have been removed and dispositioned; solutions in tanks, machines, pumps, and associated piping have been drained and dispositioned; and radioactive and chemical contamination has been controlled or fixed. Deactivation activities do not include draining utility and fire systems, disconnecting old electrical and ventilation systems, or deactivating alarms that are still in operation. This status is provided as general information only and is subject to change.

4.11.2 Building 776/777 Decommissioning Sequence

In general, the decommissioning sequence of the SETs in Building 776/777 will be as follows: GBs and B-boxes will be removed first so that Zone I ventilation can be removed. Process tanks will be removed during the same time frame as the GBs and used as "fill-in" work. After the GBs, B-boxes, process tanks, and Zone I ventilation systems have been removed, the remaining room decommissioning activities will take place. These include removal of interior walls, piping, ventilation, and electrical systems to approximately the eight-foot level or to the first tie point. At that time, samples may be taken beneath the paint on the floors and walls, between corrugated wall panels, and on the concrete decking on the first floor ceiling to identify the magnitude of fixed contamination. Depending on the sample results, additional decontamination may be required. Once the rooms have been emptied and sampling and/or decontamination has been completed, final radiological surveys will be performed on the floors and walls in preparation for building demolition. Engineering and administrative controls will be used to prevent the spread of contamination to uncontaminated and/or decontaminated areas. At this time, demolition methods and techniques are still being identified for the Building 776/777 Cluster, along with associated controls and performance specifications necessary to protect worker safety, public health, and the environment. This information will be provided in a major modification to this DOP, which will be subjected to a 45-day public comment period.

4.11.3 Building 776/777 Gloveboxes, B-Boxes and Hoods

Internal surfaces of GBs, B-boxes and hoods will be wiped down using materials such as disposable wipes and non-toxic cleaning solutions. Loose materials will be swept up, and a light abrasive material will be used, as required. More aggressive techniques, such as grit blasting, may be used depending on the levels and location of contamination.

Based on radiological survey measurements, a strippable coating may be applied to fix surface contamination during size reduction operations. Where appropriate, the strippable coating may be applied and removed several times to reduce surface contamination levels.

In some cases, lead shielding affixed to the exterior surfaces of the GBs will be removed to minimize the generation of mixed waste. However, on GB lines where wet cutting or machining operations were conducted using organic solvents, and where the interior metal cannot be decontaminated to meet "clean debris surface" standard, lead may be left in place.

Internal equipment and components will be removed before the size reduction of GBs, B-boxes, or hoods. Depending on the layout of the SET, the size of the components being size reduced, and their contamination levels, containment may be erected around the SET or equipment, or the equipment may be moved to a designated size reduction containment area.

The containment structure will be equipped with HEPA filtration to prevent the spread of contamination and to minimize worker exposure. Tie-ins to the existing building Zone I ventilation system may be used if the airflow is adequate. If not, a portable air mover fitted with HEPA filters will be employed.

Working inside a containment structure, workers will reduce the size of the component using a variety of pre-approved cutting techniques, including small hand tools, nibblers, and saws. Size reduction will minimize waste volume and allow packaging in approved shipping containers.

Contamination surveys will be performed in the work area as SETs are removed. Areas with contamination above acceptable levels will be decontaminated or fixatives will be applied to fix contamination. The choice to decontaminate or fix contamination will be made on a case-by-case basis during the development of individual IWCP work packages.

4.11.4 Building 776/777 Large Equipment

Several large pieces of equipment, including the supercompactor, horizontal accelerator, rolling mills, metal presses, and various tanks, will also be size reduced to allow packaging in approved shipping containers. Successful techniques used to size reduce GBs will be adapted when appropriate. In some instances, equipment may be size reduced in place, then transferred to another containment structure for further size reduction.

4.11.5 Building 776/777 Ventilation Systems

The ventilation systems will be removed after their services have been disconnected. Each portion of ductwork to be removed will be sleeved in plastic and cut or unbolted. Alternatively, the area may be enclosed in a containment structure. If the internal surface contamination is below packaging limits, the internal surfaces of the ductwork will be coated with a fixative. If the internal

surfaces are above the packaging limits, the internal surfaces will be decontaminated using wipes and abrasive cleaners.

The ductwork for each system will be removed starting at the point most remote from the HEPA filtration unit and fans for each leg of the system. The building ventilation fans will remain in service and throttled down to the maximum extent possible during removal of the systems. Temporary air movers with HEPA filters will be used when necessary.

4.11.6 Equipment Buried Under Building 776/777

Buried equipment (SET 84) will be removed prior to demolition of the building structure. Planning and engineering for this SET will be completed prior to decommissioning the SET. The individual IWCP work package(s) will describe additional confirmation methods and removal methods. This SET is not scheduled for decommissioning until FY03.

4.12 Building 730 Decommissioning

Building 730 is an underground process waste pit containing four Zone II plenum deluge tanks. Two of the four tanks have been filled with foam. These tanks were previously used to store solvents. During decommissioning, it may be necessary to remove one of the tanks and install a temporary tank to support closure activities. When the pit is no longer needed to support the Building 776/777 ventilation system, all four tanks and entryway to the pit will be removed.

4.13 Waste Management

The waste management strategy for the Building 776/777 Closure Project is summarized in Section 6.

4.14 Work Controls

Work Controls are established through the Integrated Safety Management System (ISMS), as discussed in Section 5.

4.15 Effluent Controls

Specific air effluent controls are discussed in Sections 7.1 and 8.4. Water effluent controls are discussed in Sections 7.4. Spill response controls are discussed in Sections 5.5.1 and 5.10.

4.16 Authorization Basis

The Building 776/777 BIO (Ref. 23) will be the AB for closure activities. Specific operations to be covered by the BIO are decontamination of equipment and surfaces, dismantling and size reduction, demolition, and waste management. The BIO contains accident analyses and facility controls for deactivation activities that will be expanded in the next revision of the BIO. Revision 1 of the BIO is currently being implemented; Revision 2 (July 1999) will incorporate administrative control requirements; and Revision 3 or appropriate page changes (September 1999) will incorporate decommissioning activities. Future revisions will incorporate size reduction technologies, including robotics.

4.17 Performance Standard

The performance standard for the Building 776/777 Closure Project is to conduct work in a manner that protects the worker, the public, and the environment. This will be accomplished by following established work practices and procedures described in Section 5 of this DOP, and by complying with the ARARs described in Section 7.

4.18 Records Disposition

Building 776/777 Closure Project records consist of the CERCLA Administrative Record, the RCRA Operating Record, the Project Record, and the Project Closeout Report.

4.18.1 CERCLA Administrative Record

Appendix C identifies the documents that constitute the Administrative Record (AR) for the Building 776/777 Closure Project. Upon completion of the public comment period, comments received from the public will be added to the AR file, along with the responsiveness summary and the LRA approval letter. LRA approval of this DOP constitutes approval of the AR file.

The following information repositories have been established to provide public access to the Building 776/777 Closure Project AR:

U.S. Environmental Protection Agency (EPA)
Region VIII
Superfund Records Center
999 18th Street, Suite 500
Denver, Colorado 80202-2466
(303) 293-1807

Citizens Advisory Board (CAB)
9035 Wadsworth Parkway
Suite 2250
Westminster, Colorado 80021
(303) 420-7855

Colorado Department of Public Health and
Environment (CDPHE)
Information Center, Building A
4300 Cherry Creek Drive South
Denver, Colorado 80220-1530
(303) 692-3312

U.S. Department of Energy Rocky Flats
Public Reading Room
FRCC Library
3645 West 112th Avenue, Level B
Westminster, Colorado 80030
(303) 469-4435

4.18.2 RCRA Operating Record

RCRA records and closure documents will be maintained with the existing Building 776/777 RCRA Operating Record. Upon completion of the Building 776/777 Closure Project, the RCRA Operating Record will be transferred to Site Records Management for storage.

4.18.3 Project Record

Project-specific documents will be filed in the Project Record until final closure is complete, at which time the Project Record will be processed through Site Records Management and archived. The Project Record will contain characterization documentation, inventory sheets, project

correspondence, comment resolution, IWCP work packages, and additional information that is a direct result of the work involved in the project. Maintaining the Project Record is a Site requirement.

4.18.4 Closeout Report

A Closeout Report will be prepared for the Building 776/777 Closure Project after work has been completed and analytical data received. The report will consist of a brief description of the work completed, including any modifications or variations from the original decision document. The report will also contain analytical results, including the results of confirmatory sampling, as well as a description of the quantity and characteristics of the waste generated and how the waste is stored or disposed.

The expected outline for the Closeout Report is shown below. The format may change to meet the needs of the project.

- Introduction
- Remedial action description
- Dates and duration of specific activities (approximate)
- Verification that remedial action goals have been met
- Verification of treatment process (if applicable)
- Radiological analysis (if applicable)
- Waste stream disposition
- Site reclamation
- Deviations from the decision document
- Demarcation of waste(s) left in place
- Final disposition of wastes (actual or anticipated)
- Next steps (e.g., interim monitoring, transfer to Environmental Restoration Program)

5.0 HEALTH AND SAFETY

This section describes the work controls that will be implemented to assure worker H&S during decommissioning. The information in this section is intended to provide a general overview of work controls. DOE is the lead agency responsible for enforcement of H&S provisions.

As prescribed by DOE Order 440.1, Worker Protection Management for DOE Federal and Contractor Employees (Ref. 25), the Building 776/777 Closure Project must comply with the OSHA construction standards for Hazardous Waste Operations and Emergency Response, 29 CFR 1910, (Ref. 26) and 1926 (Ref. 27). Under these standards, a project-specific H&S Plan (HASP), (Ref. 28), has been prepared to address the safety and health hazards of each phase of operations. The HASP will be used in conjunction with the RFETS HSP Manual (Ref. 30) in planning and performing decommissioning activities. The HASP is not intended to be a stand-alone document, but as guidance to be used during the IWCP process and generation of the activity hazards analysis (AHA). The DOE Order for Construction Project Safety and Health Management, 5480.9A (Ref. 29), also applies to this project. This order requires the preparation of Job Hazards Analysis (JHA) to identify each task, the hazards associated with each task, and the precautions necessary to mitigate the hazards. Finally, procedures for control of lead, Be, and toxic chemicals contained in the RFETS HSP Manual (Ref. 30) also apply.

To comply with the H&S standards specified, an Integrated Safety Management (ISM) process has been initiated and will be continuously implemented. As shown in Figure 9, the ISM process is structured around five core principles:

- 1) Define the work scope,
- 2) Identify and analyze the hazards,
- 3) Identify and implement controls,
- 4) Perform the work, and
- 5) Provide feedback.

The objectives of the ISM and HSP are to:

- Protect employees, co-located workers, the public and environment from hazards during decommissioning.
- Ensure appropriate safety management is administered throughout decommissioning.
- Develop and maintain a high level of H&S awareness that is practiced by all levels of management, supervision, and employees.
- Meet the goal of zero lost time accidents for the entire decommissioning process.
- Foster excellent safety communications between all Site work groups that are affected by the decommissioning of the Building 776/777 Cluster to ensure the intent and goals of RFCA (Ref. 1) are met.
- Train project personnel to ensure they are capable of completing assigned tasks safely and in compliance with applicable environmental and safety regulations.

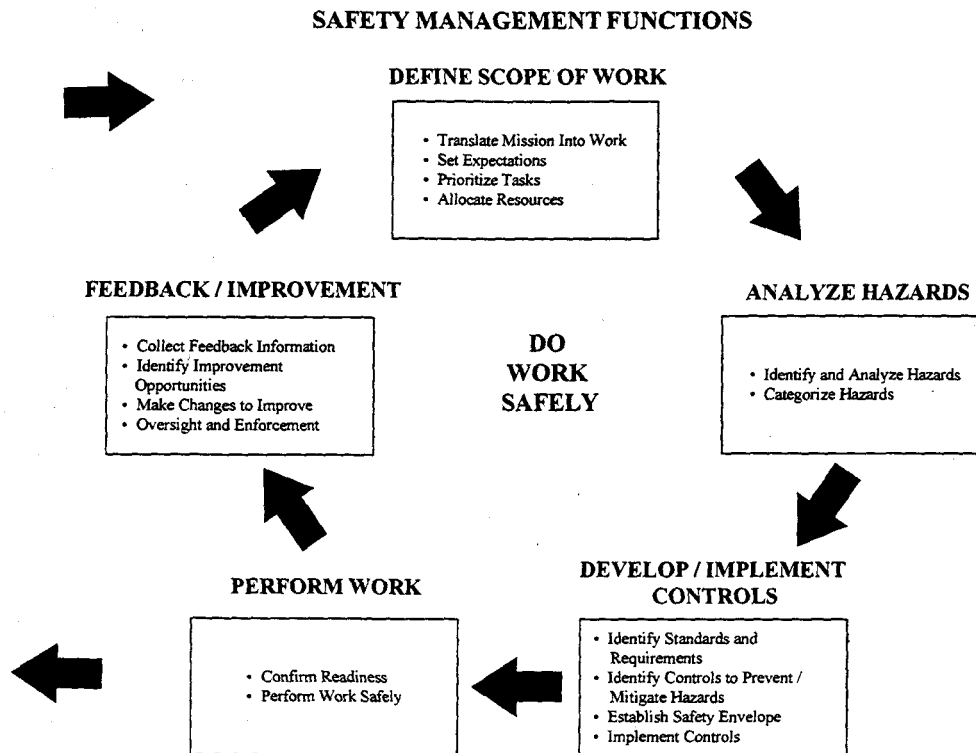


Figure 9. Integrated Safety Management Process

5.1 Integrated Safety Management System

Integrated Safety Management (ISM) is implemented through the Integrated Safety Management System (ISMS) Manual (Ref. 31). The IWCP incorporates ISM principles to prevent and/or mitigate identified work hazards.

Work will be executed following graded readiness demonstrations, which may range from pre-job briefings to Operational Readiness Reviews (ORRs). Safety Systems and Engineering will be consulted to establish the initial activity safety assessment and readiness demonstration scope.

ISM is accomplished by the commitment to the following seven guiding principles:

- 1) Line management is responsible for safety,
- 2) Clear roles and responsibilities,
- 3) Competence commensurate with responsibilities,
- 4) Balanced priorities,
- 5) Identification of safety standards and requirements,
- 6) Hazard controls tailored to the work being performed, and
- 7) Operations authorized.

Table 9 lists the programs and documents that will be used to apply the ISM process to the Building 776/777 Closure Project.

The work process consists of four major activities: defining the work scope, integrated work control, work planning, and work authorization. The work process is shown in Figure 10 and summarized in the following paragraphs.

5.1.1 Defining the Scope of Work

The work scope is initially identified in the Project Baseline Summary (PBS), then a schedule of activities and the duration are developed along with a basis of estimate (BOE) that establishes the cost and resources required. Once that is completed, an integrated building schedule is developed tying in the PBS and schedule.

5.1.1.1 *Project Baseline Summary*

The PBS is a formal document that defines a project at RFETS. Items included in the PBS are the authorized scope by FY, budget values for this work scope, milestones associated with work to be accomplished, ISM processes related to implementing the work scope, and the project WBS.

5.1.1.2 *Primavera Project Planner*

Primavera Project Planner (P3) is the standard scheduling tool used at RFETS. The lifecycle summary baseline schedule for each project (and the Site in totality) is administratively controlled through a formal configuration management system (change control) to ensure that completion dates for milestones and activities are changed only after the proper level of authorization has been obtained.

5.1.1.3 *Basis of Estimate*

The BOE identifies the resource requirements to complete an activity work scope. Also included in the BOE is the method used to derive the estimate (historical costs, estimator experience or vendor quote), and the quantity of items estimated (such as cubic meters of rubble, volume of liquids treated and number of surveillances). In addition, the calculations used to develop the estimates are included along with the specific basis (such as the method used to determine that three hours of mechanical engineering are required to perform a specific action). The database containing these BOEs (i.e., the Basis of Estimate Software Tool [BEST]) is also under the change control system.

5.1.1.4 *Project Execution Plan and Decommissioning Operations Plan*

The Project Execution Plan (PEP) is developed to describe the entire project, including landlord, SNM holdup removal, deactivation, decommissioning, and interfaces with other programs. The PEP includes details on project scope, technical approach, risk, methods of accomplishment, environmental requirements, stakeholder interface, organization structure, and financial information.

The Decommissioning Operations Plan (DOP) describes the requirements that must be met to complete decommissioning. The DOP includes a project description, alternatives analysis, project approach, waste management, health and safety, ARARs, environmental consequences, quality assurance, schedules, and organization.

Table 9. Integrated Safety Management System

Seven Guiding Principles							
Five ISM Functions	Line Management Responsibility	Clear Roles and Responsibilities	Commensurate with Responsibilities	Balanced Priorities	Identification of Safety Standards and	Hazard Controls Tailored to Work Being Performed	Operations Authorization
Define the Scope of Work	IWCP Site Documents Requirements Manual Activity Definition Process Baseline Change Control Process	IWCP Site Documents Requirements Manual Activity Definition Process Baseline Change Control Process	IWCP Site Documents Requirements Manual Activity Definition Process Baseline Change Control Process	Performance Measures Work Activity Definition RFETS CPB/10- Year Plan DOP Building 776/777 Priority List Building 776/777 Maintenance Priority Meeting Work Control Procedure	Activity Definition Process Activity Control Envelope JHA IWCP As low as reasonably achievable (ALARA) Review Criticality Safety Evaluation Transportation Safety Manual	Activity Definition Process Activity Control Envelope JHA IWCP ALARA Review Criticality Safety Evaluation Transportation Safety Manual	Authorization Agreement/ Facility Safety Analysis Report (FSAR)/ BIO Conduct of Operations (COOP) (Ref. 32) IWCP WA Procedure
Identify and Analyze the Hazards	IWCP Radiation Protection (RP) Manual Nuclear Criticality Safety Manual HSP Manual Nuclear Safety Manual Conduct of Engineering Manual (COEM) (Ref. 33)	IWCP RP Manual Nuclear Criticality Safety Manual HSP Manual Nuclear Safety Manual COEM	IWCP RP Manual Nuclear Criticality Safety Manual HSP Manual Nuclear Safety Manual COEM	Performance Measures Work Planning Process 776/777 Integrated Schedule	Activity Definition Process Activity Control Envelope JHA IWCP ALARA Review Criticality Safety Evaluation Transportation Safety Manual	Activity Definition Process Activity Control Envelope JHA IWCP ALARA Review Criticality Safety Evaluation Transportation Safety Manual	Authorization Agreement/FSAR /BIO COOP IWCP WA Procedure Pre-evolution Brief Plant Review Committee RWP

Seven Guiding Principles							
Five ISM Functions	Line Management Responsibility	Clear Roles and Responsibilities	Commensurate with Responsibilities	Balanced Priorities	Identification of Safety Standards and	Hazard Controls Tailored to Work Being Performed	Operations Authorization
Identify and Implement Controls	IWCP Nuclear Criticality Safety Manual HSP Manual COOP Site Documents Requirements Manual Training Users Manual	IWCP Nuclear Criticality Safety Manual HSP Manual COOP Site Documents Requirements Manual Training Users Manual	IWCP Nuclear Criticality Safety Manual HSP Manual COOP Site Documents Requirements Manual Training Users Manual	Performance Measures Work Planning Process 776/777 Integrated Schedule	Craft Knowledge Walkdowns Engineering Standards Operational Safety Requirements/Technical Safety Requirements Dry Runs Procedure Verification and Validation	Activity Definition Process Activity Control Envelope JHA IWCP ALARA Review Criticality Safety Evaluation Transportation Safety Manual	Authorization Agreement/FSAR/BIO COOP IWCP WA Procedure Pre-evolution Brief Plant Review Committee RWP Readiness Demonstration
Perform the Work	IWCP RP Manual Nuclear Criticality Safety Manual HSP Manual Nuclear Safety Manual COOP	IWCP RP Manual Nuclear Criticality Safety Manual HSP Manual Nuclear Safety Manual COOP	IWCP RP Manual Nuclear Criticality Safety Manual HSP Manual Nuclear Safety Manual COOP	Plan of the Week (POW)/ Plan of the Day (POD)	Pre-evolution Briefing Work Control Process POW/ POD	Pre-evolution Briefing Procedures IWCP Operations Orders Training & Qualification	Shift Manager Process Management Assessment Program
Provide Feedback	Independent Assessment Program Occurrence Reporting Program Quality Assurance (QA) Program Management Assessment Program	Independent Assessment Program Occurrence Reporting Program QA Program Management Assessment Program	Independent Assessment Program Occurrence Reporting Program QA Program Management Assessment Program		Training Lessons Learned Fact Findings		

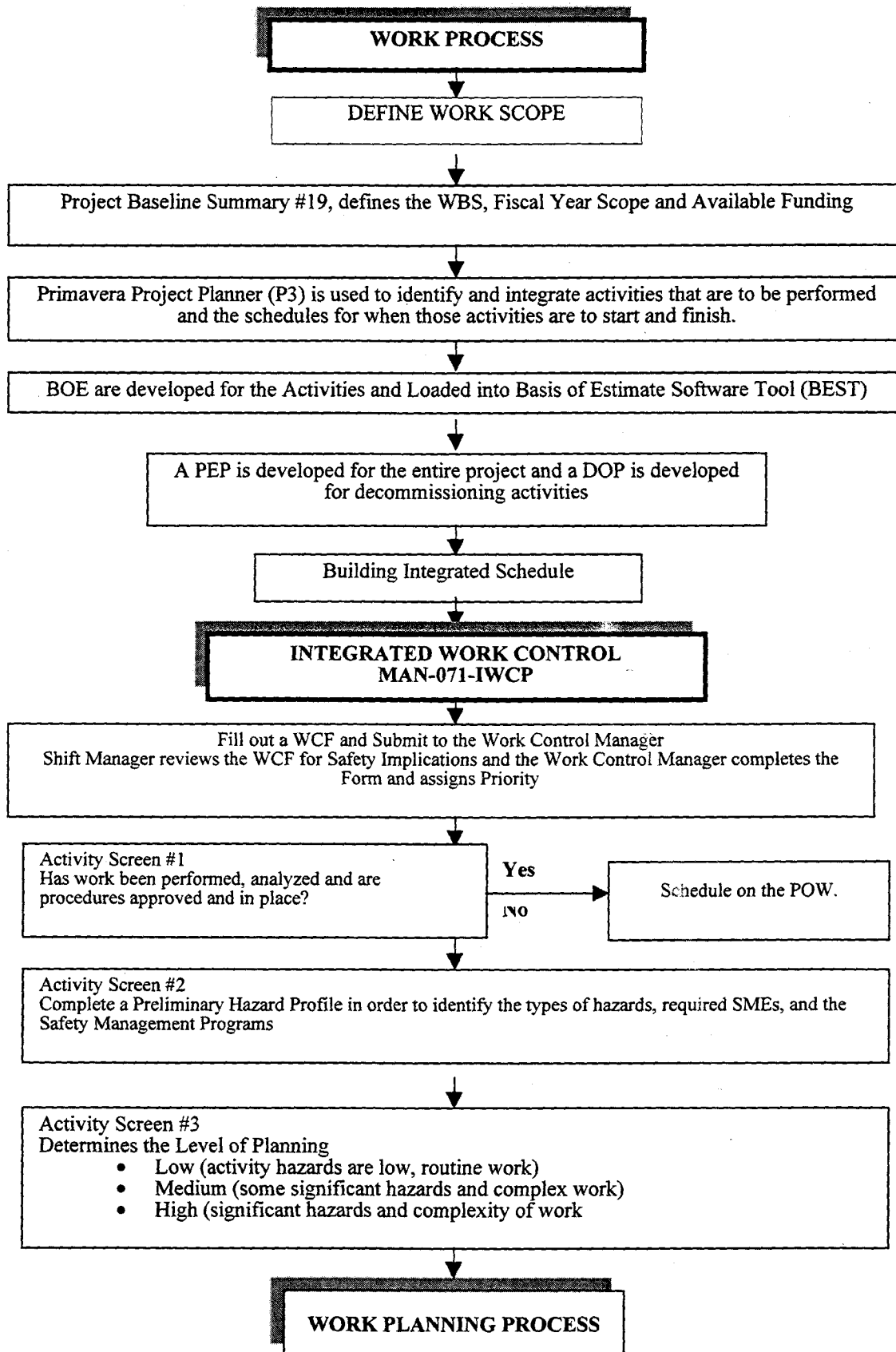


Figure 10. Work Planning Process

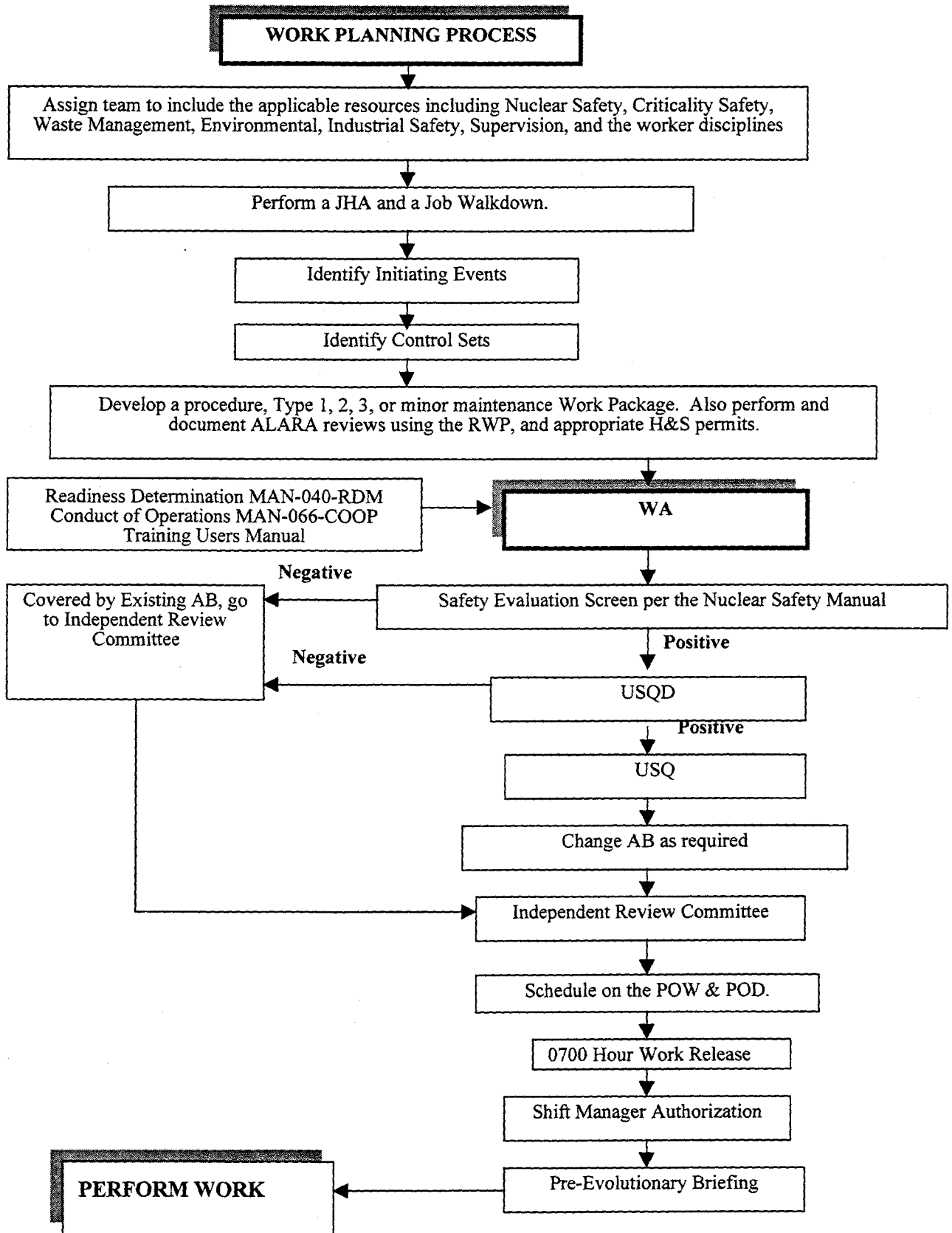


Figure 10. Work Planning Process (cont'd)

5.1.1.5 *Integrated Building Schedule*

The integrated building schedule is a detailed schedule containing the actions that must be taken to meet the scheduled activities and milestones in the P3 lifecycle baseline schedule. This schedule is a current working schedule that is updated weekly (at a minimum) to reflect the completion of activities and to include or delete activities that were omitted or no longer required. The detailed activities in the integrated building schedule roll up to a summary activity in the P3 lifecycle baseline schedule.

5.1.2 Integrated Work Control

The IWCP Manual (Ref. 12) defines the method by which ISM is implemented on the job. It provides a single process through which all work on the Site is performed. It ensures the work is screened consistently against uniform criteria and hazards are appropriately analyzed and controlled.

5.1.2.1 *Work Control Form*

Work is identified and documented on a Work Control Form (WCF). All WCFs are tracked in a site-wide database. The WCF undergoes significant review and prioritization. A determination is made whether the work scope is minor maintenance, preventive maintenance, repair, or an emergency.

5.1.2.2 *Activity Screening*

An activity screening form (ASF) is used for the following activities: (1) new projects, activities, or subcontractor services, and (2) activities for which the hazards, processes, equipment, or controls have changed since the last time they were performed or for which the work control and planning documents require development or revision. The ASF is divided into three main parts: Screen 1, Activity Prescreen; Screen 2, Preliminary Hazards Profile; and Screen 3, Planning Process Screen.

Prior to starting Screen 1, the Activity Prescreen process, the responsible manager collects all available information related to the activity being planned. Once this information is collected, the responsible manager begins the ASF by documenting the project/activity title, description, and specific work location on the first page of the ASF. The responsible manager then completes the prescreen for the activity. The questions answered for Screen 1 on the ASF are used to determine if the activity can be performed using existing work execution documents with no further screens required. If additional screens are required, both Screens 2 and 3 are completed.

Screen 2, the Preliminary Hazards Profile, is used to determine the types of hazards involved with the work activity by answering questions relevant to the number of potential hazards associated with the work activity. The overall number of hazards associated with the work activity are used as data input for scoring and answering Screen 3, the Planning Process Screen. In addition, the recommended safety management plans and relevant SMEs identified in Screen 2

may assist the responsible manager in completing the screens and in implementing the selected level of planning.

Screen 3, the Planning Process Screen, is used to select the required level of planning to be performed. This is graded to the hazards, uncertainty, and complexity of the work activity so the appropriate hazards assessment and controls development tools and techniques may be selected. The expectation is that implementation of those controls will result in the work activity being performed safely. After the appropriate level of planning has been selected using the ASF, the responsible manager and SMEs conduct the work planning activity.

5.1.3 Work Planning

The level of work planning required is determined by the results of the ASF. The ASF results are expected to be available for use before planning begins. Three options are available to the responsible manager for planning the work:

- A low planning level approach is used when activity hazards and complexity are low and the work is either routine or simple, and there is some experience at performing most, if not all, of the work.
- A medium planning level approach is used when the activity is somewhat complex, or the activity has not been performed by the project team in the past, and there are some significant hazards associated with the work or some uncertainty about the hazards.
- A high planning level approach is used when there are significant hazards associated with the activity (or significant uncertainty exists about the hazards) and there is significant activity complexity or the activity has not been performed by the project team in the past.

5.1.3.1 *Planning Team*

The makeup of the planning team depends on the uncertainty of the work activity, the hazards expected to be encountered during the performance of work, and the complexity of the work activity. The ASF provides the responsible manager with a first cut of SMEs who should be considered for membership on the planning team.

The responsible manager generally selects a team of no less than two and typically no more than 12 people. These people will have a combination of individual and collective experience and education to:

- Provide a detailed analysis of the hazards inherent in the work activity;
- Use the appropriate level of work planning (e.g., low, medium, high) to establish an adequate set of controls for the safe performance of work; and,
- Based on the results of the hazards analyses, determine and express the controls in a way that can be communicated to those performing the work.

The team may be comprised of personnel from the primary and principal subcontractors, including floor-level workers and SMEs, where appropriate. Depending on the rigor required for planning, the team may need to work together to take advantage of the synergism of the team (i.e., the deliberations and decisions about the hazards, the analyses, and the selection of controls

take place while the team is together in one location). The LRA may participate in the planning process per Section 11.1.3 of this DOP. Upon completion of the planning process, the team membership, deliberations, and decisions will be documented and included in the Project Record.

5.1.3.2 Job Hazard Analysis

The planning team reviews the results from the Hazards Profile Screen from the ASF as a starting point for identifying all the hazards associated with the activity. The JHA identifies the hazards associated with each first- and second-level tasks, and document the results. A decision is then made to determine if this information is sufficient. If not, the team conducts an integrated hazards assessment, graded to the activity.

During performance of the hazards analysis, both normal and reasonably anticipated abnormal events are considered along with any pre-existing hazards analyses or safety (e.g., AB, HSP, nuclear safety analysis, auditable safety analysis).

5.1.3.3 Initiating Events

Initiating events and potential mitigating systems failures (i.e., "what-if" scenarios) that could cause a hazard to produce undesirable consequences are identified during the JHA. Some of the scenarios determined by the "what-if" technique may not be included in existing hazards or safety analyses, and may require additional analyses to determine the consequences and required controls (e.g., nuclear safety analyses, criticality safety analyses, chemical safety thresholds). The planning team engages the appropriate qualified personnel to perform these analyses. The team determines the proper controls from their consideration of the analyses and circumstances of performing the tasks.

5.1.3.4 Control Set Identification

The planning team identifies the controls for the hazards associated with each particular task from the hazard analysis. This includes identifying documents that implement the controls for each task. Some examples are procedures, operations orders, RWPs, and H&S plans. If an existing document can not be found, the team recommends a higher level standard or reference that can be used as a basis for implementing the control.

5.1.3.5 Work Control Documents

After identifying the hazard controls, initiating events, and control sets, the project team prepares an IWCP work package or procedure that contains the results from all the steps performed. Procedures are developed generally for long-term, continuous activities in accordance with 1-MAN-001-SDRM, Site Documents Control Manual, (Ref. 34).

Type 1 IWCP work packages are used for activities that do not require engineering design. These activities are typically repairs, deactivation of equipment, or simple environmental remediation.

Type 2 work packages provide an interim step that simplifies that work that requires design by eliminating the need for developing another until the design phase is complete. This type of work package incorporates the elements of the Type 1 work package into the text.

Type 3 work packages provide the final method used to perform work requiring engineering design. They are phased in from a Type 2 work package after the applicable training and process development has been completed. This format incorporates the elements of the Type 1 and Type 2 work packages.

Minor maintenance, which is defined as minor and routine in nature is an accepted approach to performing maintenance in a more efficient manner without compromising safety. Minor maintenance activities require the ISMS approach, but in a graded and tailored manner.

The responsible manager convenes a team to perform an independent/peer review of the work control document using personnel who were not involved in the document preparation. The cross-table review team prepares a review report and submits it for review and approval by the responsible manager and program chief engineer. The responsible manager resolves and incorporates the cross-table review comments, and indicates his or her approval by signing the work package.

5.1.4 Work Authorization

Work is authorized after planned activities have been screened to ensure public, environment, and worker safety.

5.1.4.1 *Readiness Determination*

Activities are reviewed against a screening process that evaluates the work in terms of complexity, hazards, and scope. Work that is routine (i.e., where the facility has an established track record of successful accomplishment) may be performed without any readiness determination. However, work that is new or complex may require a review by facility or Site management to ensure it can be performed safely. RFFO delegates authority for readiness determinations to facility management or the Site integrating contractor, or retains the authority based on the level of significance of the activity. The LRA will be advised of the dates and times of readiness determination activities and may participate in the readiness determination process per Section 11.1.3 of this DOP.

5.1.4.2 *Conduct of Operations*

Conduct of Operations (COOP) is the Site core culture of formality and discipline, where individuals seek and accept ownership of assigned systems and equipment. Formality and discipline provide uniformity and excellence in accomplishing work. COOP is identified in MAN-066-COOP (Ref. 32). The purpose of the manual is to define the RFETS COOP program and to comply with DOE Order 5480.19, COOP Requirements for DOE Facilities.

5.1.4.3 *Training*

Training is one form of work control that must be considered and requirements determined during the work planning process. Training falls in one of two categories: regulatory required

training and job-specific training. Site employees may obtain necessary training in several ways. Resources Management is responsible for ensuring that personnel who engage in any job have the required training prior to the onset of that work. Not only do workers need the required training before commencing work, but also for nuclear facilities, access will be denied to anyone who does not meet area access training requirements. Individual companies are responsible for determining qualifications for staff that plan work using the IWCP. Qualification packages, if needed, are developed and documented in accordance with 96- RF/T&Q-0005, Training and Qualification Program, in the Training Users Manual (Ref. 35). The Training User's Manual provides guidelines for developing a Training Implementation Matrix, which lists specific training requirements for the work to be performed. Additional details regarding worker training are presented in Section 9.2. Table 10 shows the Training Implementation Matrix for decommissioning work.

5.1.4.4 Safety Evaluation Screen

All work packages and procedures are reviewed against the facility AB to ensure the established control set is adequate to protect the workers and the public. The safety evaluation screen is a checklist used to identify activities that might be outside the AB and therefore might present an Unreviewed Safety Question (USQ).

5.1.4.5 Unreviewed Safety Question

Per DOE Order 5480.21 (Ref. 24), a USQD is performed to evaluate activities with the potential to challenge the limits of the AB. It is a more in-depth review of the activity than the safety evaluation screen. Activities determined to be USQs must be approved by RFFO before work can proceed. If it is determined that additional work and facility safety controls are required to manage the hazards, these are documented in a Justification for Continued Operation (JCO), which must also be approved by RFFO before the work is initiated.

5.1.4.6 Authorization Basis Revision

If a proposed new activity is substantial, the facility's AB may be revised to provide a clear documentation of the activity, related hazards, and necessary safety controls. The AB document will also be revised on an annual basis to incorporate any USQs and JCOs that have been established during the previous year.

5.1.4.7 Independent Safety Review.

An independent safety review is a comprehensive safety review performed by technically competent individual(s) or multidisciplinary independent committees to enhance the safety of nuclear facility operations and activities. The individual(s) or majority of committee members involved in the review shall be independent of the operation or item being reviewed. Requirements for an independent safety review are outlined in 1-52000-ADM-02.01, Rocky Flats Administrative Procedures Manual Operations Review Requirement, (Ref. 36).

Table 10. Training Implementation Matrix for Decommissioning Work

JOB TITLE	M A N A G E R	M T C E C O O R D	M T C E C O O R D	M A C C O O R D	A D M I N A S S T	M T C E C O O R D	P I P E F I T T E R	P E L E C T R I C I A N	P A I N T E R	D & W O R K E R	M A C H I N I S T	P R O C S U P V S R	P R O C S P E C	U T I L W O R K E R	C A R P E N T E R	S H E E T M E T A L	COMMENTS	
TRAINING																		
Aerial Lift Training						x	x	x	x	x	x					x	x	
Alarms, Sounds, and Responses		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
Asbestos Awareness Briefing		x		x			x	x	x	x	x	x	x	x	x	x	x	
Asbestos Worker Initial Training / 32 hrs, #056-354-02						x	*	*	x							x	x	
Asbestos Worker Refresher Training / 8 hrs., #056-351-02						x	*	*	x									
Be Operations						x	x	x	x	x	x	x	x	x	x	x	x	
BIT-OJT						x						x						
Bldg Tours: 776/777		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
Building a Plastic House						x			x	x	x					x	x	
Computer Training: Unclassified		x	x	x	x	x						x						
Confined Space Entry						x	x	x	x	x	x					x	x	
Controller/Evaluator Training		x	x	x		x						x						
Crane and Hoist Inspection										*								
CTR Training and Reference			x															
DOT Awareness						x	x	x	x	x	x	x	x			x	x	
Electrical Safety - CPR qual						x		x		*								
Electrical Safety for Electrical Workers						x		x										
Electrical Safety for Non Elec Workers				x			x		x	x	x	x	x	x	x	x	x	
Emergency Response Organization (ERO)		x																
Environmental Laws and Regs Workshop		x																
Fall Protection						x	x	x	x	x	x	x	x			x	x	
General Employee Rad Training (GERT)					x	x												
General Employee Training		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
GERT/Rad Wkr Off Yr Brochure		x	x	x			x	x	x	x	x	x	x	x	x	x	x	
GBs						x	x	x	x	x	x					x	x	
GB Casual User						x	x	x	x	x	x	x	x			x	x	
GB Support Activities						x	x	x	x	x	x	x	x			x	x	
Hazard Communication Work Area Indoctrination		x	x				x	x	x	x	x	x	x	x	x	x	x	
Hazard Communications		x	x				x	x	x	x	x	x	x	x	x	x	x	
Hazardous Materials Awareness for First Responders		x																
Hazardous Waste Operations-24 hr			x															
Hazardous Waste Operations 40 hr		x					x	x	x	x	x	x	x	x	x	x	x	
Hazardous Waste Ops Refresher-8 hr		x	x				x	x	x	x	x	x	x	x	x	x	x	
Hazardous Waste Ops Supervisor		x					x					x						
Hearing Conservation		x	x	x			x	x	x	x	x	x	x	x	x	x	x	
Hoist Apparatus							x	x	x	x	x	x	x			x	x	
Incident Command		x																
Industrial Truck Safety Training							x	x		x	x	x	x			x	x	

JOB TITLE	M A N A G E R	M T C E C O L O R D	M T C E C O L O R D	M A C C O R D	M A D M I N A S T	M T C E S U P V I S O R	M P I E C E F I C I A N	E L E C T R I C I A N	P A I N T E R	D & W I N D O R K E R	M A C H I N I S T S R	P R O C S P E C	P R O C S P E C	U T I L I T Y P R E R	C A R P E T M E T A L	S H E T M E T A L	COMMENTS
TRAINING																	
IWCP	x	x	x	x	x	x						x					
Ladder Safety				x													
Lead Awareness						x	x	x	x	x	x	x	x		x	x	
Lead in the Workplace						x	x	x	x	x	x						
Lockout/Tagout	x		x			x	x	x	x	x	x	x	x		x	x	
Medical/Physical	x	x	x			x	x	x	x	x	x	x	x	x	x	x	
Nuclear Criticality Safety for Fissile Material Handler													x				
Nuclear Criticality Safety OJT			x	x			x	x	x	x	x		x		x	x	
Nuclear Criticality Safety Support			x	x			x	x	x	x	x				x	x	
Nuclear Criticality Safety Supervisor	x					x						x					
Occurrence Reporting Workshop	x																
Painting a Plastic House								x	x								
Personnel Security Assurance Program												x	x				
Pu Facilities Training for Pu Handlers												x	x				
Pressure Safety Awareness	x		x			x	x	x	x	x	x	x	x		x	x	
Rad Con for Managers	x					x						x					
Radiological Glovebag Containment	x					x	x	x	x	x	x				x	x	
Rad Glovebag Containment JPM	x					x	x	x	x	x	x				x	x	
Radiological Worker II	x	x	x			x	x	x	x	x	x	x	x	x	x	x	
RCRA Compliance	x	x	x			x	x	x	x	x	x	x	x	x	x	x	
RCRA Tank Custodian Class	x											x	x				
RCRA Waste Management Class	x											x	x				
Radioactive Source Control Knowledge Exam	x																
Rad Safety Training for Uranium												x	x				
RCRA/Waste Generator Annual Trng Ckfst	x					x	x	x	x	x	x	x	x	x	x	x	
RCRA/Waste Gen Annual Trng (Train the Trainer Workshop)						x											
Respiratory Protection: PremAire						x	x	x	x	x	x	x	x		x	x	
Respiratory Protection: Respirator Indoctrination User		x	x			x	x	x	x	x			x		x	x	
Respiratory Protection: Respirator Indoctrination Manager	x					x						x					
Respirator Fit	x	x	x			x	x	x	x	x	x	x	x		x	x	
Rocky FlatsQual Process Brochure	x					x						x					
Scaffolding Safety for Builders/Erectors						x				x					x		
Scaffolding Safety for Competent Persons						x											
TID												x	x				
Waste Generator All Areas Class	x					x	x	x	x	x	x	x	x	x	x	x	
Welding Safety						x	x										x

5.1.4.8 Plan of Week

The POW is used to identify work that will be performed during the next week. A regularly scheduled meeting is held weekly to discuss those planned activities.

5.1.4.9 Plan of the Day

The POD is used to schedule, authorize, and control activities in the facility. It is an important forum for resolving conflicts in scheduling work and providing for discussion about planned activities. Each facility plans and schedules work activities with about a three-month horizon, then refines the planning about a week in advance and translates detail into the POD. The POD includes operations, maintenance, surveillances, inspections, and other activities.

5.1.4.10 Work Release

Once the POD has been established and approved by facility management, a meeting is held early in the shift to release work for the day. The Shift Manager chairs this meeting, during which he or she explains terminations in the facility, identifies radiological areas, and ensures the work to be performed is fully supported.

5.1.4.11 Pre-Evolutionary Briefing and Job Task Briefing

Pre-evolution briefings and job task briefings are performed to ensure that personnel preparing to conduct operations and other work understand what is to be performed, understand the hazards and controls, and have an opportunity to ask questions or raise concerns. The pre-evolution briefing is more formal than the job task briefing. It is a forum for accomplishing ISMS safety functions at the floor level. The pre-evolution briefing provides for feedback as well as for reviewing the scope of work, and reviewing the hazards and the controls to do the work safely. It is also a point in the work process where the required prerequisites are confirmed. A job task briefing is less formal than a pre-evolution briefing. It is conducted by the job foreman and serves as one method by which the ISMS process is implemented on the floor for non-complex, routine, and low hazard work activities. A pre-evolution briefing is documented; a job task briefing is not.

5.2 Criticality Safety

The criticality safety program establishes controls for building activities involving fissionable material. This program includes developing engineered and/or administrative criticality safety controls, monitoring compliance status with established controls that include occurrence investigation and reporting, and maintaining and controlling distribution of technical documents. The program ensures that the criticality safety organization must approve criticality safety controls either through new evaluations or through the Criticality Safety Limit Examination Programs for all activities involving the storage, relocation, and/or processing of fissionable material. The Criticality Safety Program will be implemented in accordance with the DOE's approved RFETS Implementation Plan for the Nuclear Criticality Safety Manual (Ref. 37).

5.3 Radiation Protection

The radiation protection program implements standards, limits, and program requirements for protecting individuals from exposure to radioactive materials. The program is based on the principle of ALARA (i.e., as low as reasonably achievable). Personnel are protected from radioactive materials through radiological surveillance, contamination control, and minimization of exposure. The program provides for personnel dosimetry, surveillance and maintenance of engineered radiation protection systems, the RWP, and area surveillance and posting.

Radiological protection for planned activities is ensured through reviews of work control documents, pre-job surveys, and the use of PPE. Personnel exposures are formally tracked, recorded, and reported back to individuals. Radiological monitoring will be performed in accordance with the RFETS HSP Manual, Radiological Control Manual, and Radiological Safety Procedures (RSPs).

5.4 Hazardous Material Protection

Hazardous material protection is accomplished through the H&S Program. This program provides for industrial hygiene and safety (IH&S), which ensures personnel exposures to physical, chemical, and biological hazards in the work environment are controlled. The H&S Program philosophy fosters management accountability and worker involvement. It ensures that supervisors and safety professionals are required to review work areas and the building in general to identify H&S hazards. Program safety and technical reviews are integrated with work control processes to ensure non-radiological H&S hazards (i.e., physical, chemical, biological) are identified and appropriate measures are instituted to protect the worker, such as engineered systems, PPE, and monitoring equipment.

Standards for the hazardous material protection program are defined in 29 CFR Part 1910 (Ref. 26), the HSP Manual, and the Potentially Shock Sensitive/Explosive Chemical Characterization, Management, and Disposal Plan.

5.5 Radioactive and Hazardous Waste Management

The waste management, environmental protection, and transportation programs are responsible for radioactive and hazardous waste management at RFETS.

5.5.1 Waste Management and Environmental Protection

The waste management and environmental protection programs provide for managing radioactive and hazardous waste inventories; controlling building effluents; and managing waste generation, storage, treatment, and packaging. These programs, in complying with the standards set by waste management and environmental protection regulations, prevent hazardous and radioactive material spills by ensuring appropriate packaging, inspection, and storage of those materials. These programs aid in the detection of confinement degradation through leak detection practices and routine surveillance and inspection, and assist with appropriate response planning and preparation for events such as hazardous material spills.

5.5.2 Transportation

The transportation program specifies safe and compliant packaging requirements for both onsite and offsite transportation of radioactive and hazardous materials to prevent radioactive and hazardous material release, and to minimize accident consequences. Facility management is ultimately responsible for the safe and compliant packaging of material that is released for transport. The transportation program describes a process for the incorporation of packaging and labeling requirements into work control documents and defines training requirements for personnel involved in packaging and shipment of hazardous materials. Specific to the safe packaging of hazardous materials for shipment, the U.S. Department of Transportation (DOT) regulations define the minimum standards for protecting workers, the public, and the environment from a release of containerized hazardous materials. The RFETS transportation program is implemented through the Rocky Flats Transportation Safety Manuals (Ref. 38).

5.6 Conduct of Operations

The COOP Program (Ref. 32) provides an accurate, disciplined, and formal method for conducting facility operations. It promotes implementation of a set of standards that establish safe operations. Provisions of the program specify that all work is performed by appropriately trained personnel using adequate and controlled procedures, that work is properly supervised, that prior approval of all work is obtained from the Shift Manager or Configuration Control Authority (CCA), and that accountability exists for work performance. The program also provides processes for monitoring facility operations through functions such as log keeping, conduct of rounds, and internal surveillances.

5.7 Fire Protection

The fire protection program provides fire protection engineering, fire hazards analysis, fire prevention requirements (e.g., ignition sources, inspections, training, control of combustibles, transient fire loads, and hot work), and fire response. Fire response plans, training drills, as well as inspection, testing, and maintenance of both engineered fire protection and notification systems ensure personnel safety, fire fighting capability and property loss minimization if a fire should occur. The fire protection program is implemented by the relevant sections of the HSP Manual (Ref. 30).

5.8 Industrial Safety

The industrial safety program contains provisions that implement federal regulations addressing standard industrial hazards. Precedents for controlling standard industrial hazards are well established through institutionalized standards, guidelines, and good practices. In addition, DOE has established its own standards that are identified in DOE Orders. Industrial safety is generally implemented in concert with the hazardous material protection and work control program requirements.

Standards for industrial safety are found in 29 CFR Part 1910 (Ref. 26), portions of 29 CFR 1926 (Ref. 27), and DOE Orders and implemented by the relevant procedures of the HSP Manual (Ref. 30).

5.9 Quality Assurance

The Quality Assurance Program (QAP) assures consistent and appropriate application of quality requirements to the performance of activities using a graded approach. Quality assurance is discussed in Section 10.

5.10 Emergency Preparedness

The emergency preparedness program provides the plans, procedures, and resources necessary to respond to Site emergencies. The program is based on a comprehensive understanding of the hazards and potential radioactive material and hazardous chemical release mechanisms present in the facility.

The program protects facility personnel through management planning, designation of an emergency response organization, and training and drills (site-wide and building-specific) for possible abnormal events including fires, hazardous material spills, inadvertent criticalities, and personnel accountability during facility evacuation. The program provides the necessary trained emergency response personnel to ensure worker and public safety during an abnormal event. Emergency preparedness program elements also include pre-planned actions, prompt and accurate emergency classifications, and timely notifications of the emergency preparedness organization.

The emergency preparedness program is implemented through the RFETS Emergency Plan (Ref. 39), as augmented by the Building 776/777 Emergency Response Operations procedure (Ref. 40).

5.11 Preliminary Hazards Analysis

A Preliminary Hazards Analysis (PHA) has been developed based on the generic activities that are planned decommissioning. The PHA is summarized in Table 11. The PHA documents the hazard identification process for operational activities anticipated to be performed during closure. This PHA will be used with the RLCR to generate detailed AHAs for individual job tasks.

Table 11. Preliminary Hazards Analysis

Major Work Task	Hazard	Cause	Preventive Measures (Evaluated on Case-by-Case Basis)
Perform asbestos and lead abatement and clean up activities	Exposure to asbestos airborne and surface contamination fibers that are lung hazards. Exposure to lead materials is hazardous to internal organs of the body.	Improper clean up techniques including: improper tent decontamination or PPE usage. Improper ventilation usage. Improper waste handling and disposal. Lack of adequate engineering controls. Improper characterization.	Obtain services of certified state abatement inspector to plan and supervise the abatement project. Ensure all workers are trained as asbestos workers. Ensure all RFETS asbestos/lead prerequisites are met before job commencing. Develop and implement an AHA(s) for the job. Ensure all medical, training and PPE prerequisites are met. Ensure IH&S personnel perform the proper air monitoring sampling during the course of the job. Ensure all posting and clearance sampling is performed. Ensure that all areas are evaluated and properly characterized by SME or competent person.
Perform Be decontamination and cleanup activities	Exposure to Be contamination is a lung hazard. Improper use of equipment can cause extremity or limb damage to workers.	Improper clean up techniques including: Improper tent, decontamination or PPE usage. Improper ventilation usage. Improper waste handling and disposal. Lack of adequate engineering controls	Ensure all workers are trained as Be workers Ensure all RFETS Be prerequisites are met prior to job's commencing. Develop and implement an AHA(s) for the job. Ensure all medical, equipment training and PPE prerequisites are met. Ensure the proper air monitoring sampling is performed during the course of the job by IH&S personnel. Ensure all posting and clearance sampling is performed.
Perform radiological decontamination operations	Exposure to radioactive materials internally and externally. Cell damage and damage to internal body organs may occur with over exposures to radioactive materials. Improper use of scabbling or other decontamination equipment can injure extremities or limbs of workers by causing gash or cutting wounds.	Improper cleanup techniques including: Improper tent, decontamination or PPE usage. Improper ventilation usage. Improper waste disposal and handling. Improper training in the use of decontamination equipment.	Ensure all workers are trained as Rad workers. Ensure all RFETS Rad worker prerequisites are met prior to job commencing. Develop and implement an AHA(s) for the job. Ensure all medical, equipment training and PPE prerequisites are met. Ensure the proper air monitoring sampling is performed during the course of the job by radiological operations personnel. Ensure all posting and clearance sampling is performed.

Major Work Task	Hazard	Cause	Preventive Measures (Evaluated on Case-by-Case Basis)
De-energize work areas and remove cables and wiring	Electrical shock to body, cutting of extremities of body parts using wire strippers or other hand tools, fall off ladder or scaffolding if used.	Lockout/Tagout (LO/TO) not used properly, all workers not informed of LO/TO status. Improper use of hand tools, ladders or scaffolding. Improper lighting in room may result in improper use of equipment Lack of As-Built drawings	Utilize LO/TO procedures properly (including verification that energy source has been isolated). Inspect all hand tools before use. Ensure all workers are trained in ladder, scaffolding and fall protection measures before using this equipment Develop and use task specific AHAs. Perform work area walkdown and conduct proper planning meetings and briefings. Follow all IWCP instructions. Ensure all worker training is current.
Move equipment out of rooms to work areas and transport using forklifts, pallet jacks or pick-up trucks.	Back injuries, pinching, and extremity damage by dropping or falling objects. Internal and external body injuries by vehicle impact. Eye injuries by poking or dust particles in eye hazards. Be exposure from contaminated surfaces under equipment.	Improper lifting techniques, job flow not planned properly, pre-job walkdowns not performed, vehicle alarm systems not working, buddy system not used, lack of attention to detail, worker fatigue, no use or improper use of PPE.	Perform pre-job walkdowns. Develop AHA for job tasks. Use buddy system. Ensure vehicle alarm and braking systems are working properly. Utilize PPE properly. Perform proper lifting techniques. Ensure proper job flow is used and job is not rushed. Do not attempt o move items that are stacked too high. Cover all sharp edges. Perform Be pre-job swipe sampling. Use of material handling equipment.
Cut out piping systems in rooms or work areas	Cutting of body limbs or body parts with mechanical equipment. Piping falling on feet, pinch points of rolling pipe, liquid splashes if piping is not drained. Rebound of pipe can cause body injuries. Radiological/chemical exposures.	Improper use of mechanical equipment including no training on specific equipment being used, piping not rigged or restrained properly, piping not drained prior to cutting. Improper engineering controls.	Proper training with cutting equipment. Develop and utilize AHA for job tasks. Rig and restrain piping properly. Utilize pipe caps after cutting to keep debris from falling out and cover sharp edges of pipes after cutting. Ensure piping has been properly taken out of service. Utilize proper PPE as described in the AHA and RWP.

Major Work Task	Hazard	Cause	Preventive Measures (Evaluated on Case-by-Case Basis)
Hoist, rigging and lifting forklift operation	Bodily injuries due to falling objects or pinching of workers due to space limitations.	No rigging plan, improper rigging techniques, improper worker body positioning.	Develop rigging plan. Comply with all RFETS standards for rigging. Develop AHA and implement. Perform pre-job walkdown and conduct pre-evolution briefing. Walkdown rigging path during all phases. Perform pre and post job inspections on all rigging equipment. Ensure all workers are properly trained. Follow all required steps in the IWCP.
Package waste into containers for storage and shipment. Segregate waste to meet WAC.	Pinching of extremities on container lids, barrels rolling on feet, back sprains, foot injuries as vehicle wheels impact or roll onto extremities, cuts/gashes of hands by tooling.	Improper lifting and handling techniques, wrong tooling used to put lids on containers, pallet jack or forklift ramming into workers, job rushed or not planned properly. Package does not meet WAC.	Use of trained and certified waste generator as appropriate. Develop AHA and implement. Review lessons learned from previous waste handling operations. Develop proper tool list before starting job. Ensure all waste containers are properly staged before starting job. Ensure all building notifications are made before moving and handling waste. Follow appropriate RFETS requirements for waste handling and movement. Follow all IWCP requirements.
Cut out and remove GBs in rooms or work areas	Pinch points, foot and hand injuries, cutting of hands/arms, eye and head injuries, burning of skin or extremities. Release of radioactive/chemical contamination and inhalation.	Improper use of grinders or no guards on grinders, cramped working conditions, bad lighting, limited vision, breaking of leaded glass, plasma slag burns through clothing, improper use of PPE Improper use of fixatives. Improper use of respirator Improper engineering controls	Proper training with cutting equipment. Develop and utilize AHA for job tasks. Rig and restrain GBs properly. Use pipe caps on GB piping after cutting. Ensure GBs have been properly taken out of service before work starts. Use proper PPE as described in the AHA. Perform tooling and respirator inspections before each use. Follow all IWCP requirements.
Construct and use scaffolding to perform job tasks	Fall hazards, workers struck by falling objects, hand injuries.	No use of fall protections, improper training, no use of PPE, improper use of tooling, improper rigging and transport of scaffolding pieces, no scaffold inspections, scaffold collapse.	Proper training for scaffold erection and use. Fall protection and rigging training. Proper use of PPE. Develop AHA. Perform and document scaffolding inspections. Ensure all scaffolding is tagged properly. Ensure all toeboards and side rails or compensatory measures are in place.

Major Work Task	Hazard	Cause	Preventive Measures (Evaluated on Case-by-Case Basis)
Perform radiological decontamination operations using scabbling machines, hydrolyzing techniques, hand wiping methods or by applying stripcoat decontamination paint	Injuries to hands and feet by gouging, cutting or impact; inhalation, ingestion or skin exposure to radioactive materials and ammonia vapors; electrocution; falls.	Improper or no training on equipment used for decontamination, improper work are ventilation, improper use of PPE, no job planning. No LO/TO of work area No fall protection	Conduct mock up training on decontamination equipment and stripcoat operations. Develop AHA for job tasks. Ensure work area is properly ventilated before apply stripcoat. Ensure LO/TO operations have been performed. Wear prescribed PPE as determined by IH&S and Radiological Protection. Utilize fall protection, when required. Follow all IWCP, AHA and RWP requirements.
Remove HVAC ductwork	Pinch points, cutting hands, fall from scaffold, release of contamination. Exposure to radiological/chemical contamination.	Improper use of cutting equipment. Non-existent of loose guard rail. Improper use of fixatives. Improper use of respirator. Improper use of ventilation	Proper training in use of tools and PPE. Scaffold inspection before use. Develop AHA for job tasks. Training in use of fixatives. Ensure all toeboards and side rails or compensatory measures are in place.
Perform final cleanup of building/structure	Trips, falls, head wounds, pinch points, punctures, contusions, skin contamination, inhalation of radioactive materials.	Housekeeping, falling objects, non-use of PPE, improper use of PPE, sharp edges or sharp objects not protected, no fall protection, improper ladder use.	Perform weekly housekeeping inspections. Utilize fall protection when applicable. Develop AHA for job task. Utilize PPE property and as described by IH&S and Radiological Protection. Follow all ALARA reviews, AHAs, RWP and IWCP requirements. Obtain confined space permits and training when required.
Perform final survey of building	Falls, head wounds, electric shock, abrasions, cuts, pinches.	No fall protections, improper use of instrumentation, working in tight spaces, tripping hazards, bad housekeeping, improper termination of wiring.	Develop AHA for job task. Perform pre-job walkdowns. Utilize fall protection when required. Complete ladder training as required. Utilize two-person rule when working in elevated locations (above 6 feet). Obtain confined space permits and training when required. Follow all AHA and RWP requirements.

6.0 WASTE MANAGEMENT

The following paragraphs present an overview of the waste management strategy for the Building 776/777 Cluster.

6.1 RCRA/CERCLA Transition

At this time, a site-wide strategy for managing remediation waste has not been finalized. As a result, during the early stages of decommissioning, hazardous and mixed wastes will be managed in compliance with the substantive and administrative requirements of RCRA/CHWA, the CHWR, and the RFETS RCRA Part B Permit. Once the remediation waste management strategy has been finalized, this information will be provided to the LRA in a minor modification to this DOP, consistent with the waste management requirements of the DPP.

6.2 Waste Types and Volumes

As discussed in Section 2, beginning in 1958 and continuing through 1969, Building 776/777 housed the Site's Pu foundry, fabrication operations, and parts assembly operations. Subsequent to the fire in 1969, the primary function of the building turned to waste and residue handling, disassembly of retired weapons components, special projects, and support operations, such as laboratories. As a result, a variety of regulated wastes are currently managed and stored in Building 776/777, and additional waste will be generated during decommissioning. Table 12 presents a list of the process waste stored in the building on June 1, 1999. Table 13 provides an estimate of the remediation waste types and volumes that will be generated during decommissioning.

Table 12. Building 776/777 Waste Inventory

Waste Type	Number of Packages
Sanitary	35
Non-Rad/Haz	3
Non-Rad/TSCA	2
LLW	297
LL TSCA	3
LLM	74
TRU	227
TRU TSCA	1
TRM	75
RES	1161
REM	540

Source: WEMS Package Inventory Report, 06/01/99

Table 13. Estimate of Wastes to be Generated During Decommissioning

Category	Sub-Category	Container Type	Volume (m ³)*	Proposed Destination
Radioactive Waste				
TRU/TRM Waste				
	Straight TRU	SWB/55 Gallon Drums	2,264	WIPP
	TRU Mixed (TRM)	SWB/Drums	520	WIPP
	TRU/TRM Liquids	Drums	5	Treatment-WIPP or Approved TSD
LLW/LLM Waste				
	Straight LLW (including asbestos)	Crates/Drums	4,969	Nevada Test Site (NTS), Envirocare
	Structural Rubble	Crates/Drums	3,400	NTS, Envirocare
	Contaminated Recycle Metal	Crates/Drums	1,100	Approved Vendor
	TSCA (PCBs)	Drums	1	Approved TSD
	LLW Liquids	Drums	4	Approved TSD**
	LLM	Crates/Drums	500	Approved TSD**
	LLM Liquids	Drums	6	Approved TSD**
Non-Radioactive Waste				
Hazardous Waste				
	RCRA Solids	Crates/Drums	40	Approved TSD
	RCRA Liquids	Drums	4	Approved TSD
TSCA				
	PCBs	Crates/Drums	1	Approved TSD
Sanitary				
	Routine Sanitary	Crates/Drums	809	Sanitary Landfill
	Special Sanitary (Asbestos, Be)	Crates/Drums	10	Approved TSD

* Waste volume estimates include demolished structures.

** Assumed to include on-Site treatment facilities (e.g., RCRA Unit 374.3).

6.2.1 Hazardous Waste

Most of the hazardous waste at RFETS results from routine operations, such as painting, parts cleaning, and equipment maintenance. Building 776/777 currently has a small inventory of hazardous waste in storage and additional small amounts of hazardous waste will be generated during decommissioning activities, resulting in less than 1% of the overall waste generated from the project. Hazardous waste is routinely shipped to off-site commercial facilities for treatment, recycling, and/or disposal.

6.2.2 Low-Level/Low-Level Mixed (LLW/LLM) Wastes

LLW and LLM wastes were generated in Building 776/777 and other RFETS facilities as a result of nuclear weapons component production processes, and they continue to be generated during routine operations in areas where radioactive materials are managed. LLW and LLM waste forms include combustibles, light metals, and liquids. Building 776/777 is currently used to store both LLW and LLM wastes, which will be repackaged, if necessary, and transferred to a

treatment and/or storage area in preparation for shipment to Envirocare or the Nevada Test Site (NTS). Additional LLW and LLM waste will be generated during decommissioning. Approximately 55% of the waste produced during decommissioning activities will be LLW and about 18% will be LLM waste.

6.2.3 Transuranic/Transuranic Mixed (TRU/TRM) Wastes

Building 776/777 has an existing inventory of TRU and TRM wastes, which will be repackaged, if necessary, and transferred to a treatment and/or storage area in preparation for shipment to WIPP. Additional TRU/TRM wastes will be generated during decommissioning as GBs and B-boxes used in the fabrication, testing, assembly, coating and disassembly of weapon components and the associated Zone I ventilation systems are dismantled and stripped out. Approximately 17% of the waste generated during decommissioning is expected to be TRU and TRM waste.

6.2.4 Residues/Mixed Residues (RES/REM)

Building 776/777 has an existing inventory of solid and liquid RES and REM, which will be transferred to other RFETS facilities for treatment and/or repackaging in preparation for shipment to WIPP. Approximately 1,700 containers of RES and REM are currently stored in Building 776/777, and about 200 liters of liquid RES/REM remain as holdup in tanks and ancillary equipment. No new RES or REM will be generated during decommissioning.

Liquid REM contained in tanks and ancillary equipment is managed under the terms and conditions of the Mixed Residue Compliance Order on Consent (Ref. 41) and associated Mixed Residue Tank Plan. The REM tanks in Building 776/777 (Ref. Table 6) are operationally empty. During decommissioning, these tanks will be physically emptied and/or closed according to the Building 776/777 Closure Project Schedule (Ref. Appendix D). During this time, liquids remaining in these tanks may be transferred from tank to tank, drained into four-liter bottles, and stored in gloveboxes for short periods of time, or drained into portable collection carts and staged in various locations, pending transfer to Building 371, Building 374, or Building 774 for processing, or other appropriate unit for treatment. Prior to the transfer or draining of liquids, a request for authorization to temporarily store REM solutions will be submitted to CDPHE's project manager. The request will identify the tanks, gloveboxes, and portable cart staging locations needed to support liquid removal activities. During liquid transfer and draining activities, appropriate controls will be established to prevent the unauthorized mixing of incompatible wastes, including sampling, if necessary.

REM tank inspection frequencies vary, based upon the closure status and particular hazards associated with individual tank systems. Operationally empty tanks are inspected on a daily basis, and physically empty tanks are inspected quarterly. Other inspection frequencies may be determined appropriate on a case-by-case basis. Prior to implementing any change in inspection frequencies, a request for authorization will be submitted to CDPHE's project manager. Inspection frequencies will be documented in the Building 776/777 Operating Record, along with inspection log sheets for these tanks. Tanks will be inspected to verify the absence of a release and to ensure no new liquid or hazardous waste has been added to the tank system. For physically empty tanks, inspections will also verify physical or administrative controls are in

place. In the event additional inventory is discovered in a tank, the responsible building manager will be notified and an action plan will be developed to determine the source of the liquid, or schedule a sampling event or other appropriate action to make a hazardous waste determination. If appropriate, the action plan may include draining the liquid from the system. The DOE, Contractor, or Subcontractor project manager will notify CDPHE's project manager of intended corrective actions.

The Building 776/777 HASP contains pre-planning requirements for responses to possible releases from REM tank systems. Pre-planning activities include identification of vital components of the tank system, identification of locations of primary shut-off valves capable of isolating feed to a tank, and a pre-release plan, which specifies the recommended method to drain the tank system (e.g., hot tapping at a low spot, draining into bottles, or draining into another tank system). Building operations personnel are trained to implement the pre-release plan and accompanying shut-off procedures. In the event of an actual release from a REM tank system, the Site's RCRA Contingency Plan will be followed.

In accordance with its terms, the Mixed Residue Compliance Order on Consent (Ref. 41) for tank management is hereby terminated as to each of the mixed residue tanks located in Building 776/777.

6.2.5 Polychlorinated Biphenyls

PCBs may be found in equipment oils, fluorescent light ballasts, dried applied paints, and capacitors. Equipment oils will be managed as "PCB liquids," intact ballasts and dried paints containing PCBs will be managed as "PCB bulk product waste," leaking ballasts and other waste containing PCBs as a result of a spill will be managed as "PCB remediation waste," and capacitors containing PCBs will be managed as "PCB items" in accordance with the substantive requirements of 40 CFR 761 (Ref. 42). A small amount of PCB waste is stored in Building 776/777. Very small amounts will be generated during decommissioning (i.e., <1% of decommissioning waste). This waste will be packaged and transferred to a storage area pending shipment to an approved treatment and/or disposal facility.

6.2.6 Asbestos Containing Material

ACM, in the form of pipe and equipment insulation, mastic, and floor and ceiling tiles, was used extensively in Building 776/777. As discussed in Section 4, ACM will be removed during decommissioning, and packaged and disposed of at an approved solid waste disposal facility. ACM contaminated with low levels of radioactivity will be sent to NTS and ACM contaminated with hazardous waste will be sent to Envirocare. Uncontaminated ACM will be disposed of in an approved sanitary landfill. ACM will constitute approximately 50% of the LLW generated during decommissioning.

6.2.7 Sanitary Waste

Sanitary waste is collected for recycle or disposal at an approved off-site landfill. Approximately 10% of the waste generated from decommissioning activities will be categorized as sanitary

waste. This waste category may include Be waste that is not considered hazardous waste (i.e., Be that is not Be powder).

6.2.8 Wastewater

Wastewater generated from decommissioning activities will be collected and characterized to determine the appropriate disposal path. Domestic water; non-hazardous, non-radioactive, non-domestic water (i.e., cooling tower water and boiler blowdown); and non-hazardous, non-radioactive internal waste streams generated during decommissioning will be transferred to the Site sewage treatment plant for processing. Hazardous and/or radioactive wastewater that meets the acceptance criteria of the Building 374 treatment facilities will be collected and transferred to Building 374 for treatment. Hazardous and/or radioactive wastewater that does not meet the acceptance criteria of the Site sewage treatment plant or Building 374 treatment facilities will be managed in temporary units authorized by the CDPHE (Ref. Section 6.5). It is estimated that less than 1% of the waste generated during decommissioning will be categorized as wastewater.

6.2.9 Waste Chemicals

Pursuant to the Waste Chemical Compliance Order on Consent (Ref. 43), the waste chemical roundup was completed for the Building B777/776 Cluster in 1998. To minimize personnel exposure to radioactive contamination, Be, and asbestos, certain waste chemicals were identified as "excluded chemicals" in accordance with ¶22 of the Compliance Order and disposition of these chemicals was deferred to deactivation and/or decommissioning. As shown in Table 14, there are currently 16 areas where "excluded chemicals" are or may be stored.

Excluded chemicals and other chemicals used during decommissioning activities will be managed as follows:

- Areas used to store "excluded chemicals" are posted with signs identifying them as "CONSENT ORDER EXCLUDED AREAS" or they are described in a building Operations Order that includes a requirement to notify a named point of contact prior to entry (Ref. 44).
- Areas used to store "excluded chemicals" are inspected weekly (Ref. 44).
- Safety-related documents allowing entry or work in an area containing "excluded chemicals" take into account the risks associated with the waste chemicals that may be stored in the area (Ref. 44).
- Liquid waste chemicals will be characterized in accordance with 6 CCR 1007-3, Part 262.11, and managed as process waste under RCRA/CHWA.
- Solid waste chemicals will be characterized to determine the appropriate ARARs and managed as remediation waste.
- Waste chemicals will be disposed of at approved disposal facilities.

In accordance with its terms, the Waste Chemical Compliance Order is hereby terminated as to each excluded area identified in Table 14.

Table 14. "Excluded Chemical" Areas in Building 776/777

Bldg.	Location	SET#	Reason for Exclusion	Status
776	Rm. 134W, TA & RDA	66	TA & RDA - High Contamination Areas	Chemicals present
776	Rm. 135, FBI GBs	61	Inoperable Gloveboxes	Unknown if chemicals present
776	Rm 146	60	High Contamination Area	Unknown if chemicals present
776	Rm. 146A	60	High Contamination Area	Unknown if chemicals present
776	Rm. 146C	60	High Contamination Area	Unknown if chemicals present
777	Rm. 125, GB550*160	1	Inoperable Glovebox	Chemicals present
777	Rm. 131, GB207-110	6	Inoperable Glovebox	Chemicals present
777	Rm. 430, GB207*758	24	Inoperable Glovebox	Chemicals present
777	Rm. 430, GB399	21	Inoperable Glovebox	Chemicals present
777	Rm. 430, GB451	22	Inoperable Glovebox	Chemicals present
777	Rm. 432B	27	High Contamination Area	Unknown if chemicals present
777	Rm. 452, GB034	34	Inoperable Glovebox	Chemicals present
777	Rm. 452, GB541	35	Inoperable Glovebox	Chemicals present
777	Rm. 452, Downdraft	35	Out of Service (Red Tag)	Unknown if chemicals present
777	Rm. 445, Hood #28	33	High Contamination Area, Out of Service (Red Tag)	Chemicals present
777	Rm. 445, Hood #29	33	High Contamination Area, Out of Service (Red Tag)	Chemicals present

6.2.10 Idle Equipment

Idle equipment containing hazardous materials is managed under the Idle Equipment Compliance Order on Consent (Ref. 45) and the Idle Equipment Management Plan (Ref. 46). The substantive requirements for the previously identified idle equipment listed in Table 15, and any idle equipment discovered during deactivation and decommissioning, are as follows:

- Fluids will be drained from idle equipment (e.g., oils, cutting fluids).
- Fluids will be characterized in accordance with 6 CCR 1007-3, Part 262.11.
- If the fluid is oil that has been mixed with a hazardous waste, it will be managed as hazardous waste under 6 CCR 1007-3, Parts 261 through 268.
- If the fluid is oil that has not been mixed with a hazardous waste, it will be managed as used oil for recycle, subject to the substantive requirements of 6 CCR 1007-3, Part 279. The substantive requirements include container labeling (i.e., USED OIL), container storage, and release response requirements.

- If the fluid is oil containing >50 ppm PCBs, it will be managed as a PCB liquid under the substantive requirements of 40 CFR 761.
- Drained equipment will be evaluated to determine final disposition as a product (i.e., transfer to Property Utilization & Disposal [PU&D]), scrap metal, or waste.

In accordance with its terms, the Idle Equipment Compliance Order on Consent is hereby terminated as to each piece of idle equipment listed in Table 15.

Table 15. Building 776/777 Idle Equipment with Hazardous Materials Inventory

Room	Idle Equipment Number	SET#	Description	Material	Quantity
2nd Floor	776-0007	48	S-6 Kathbar Unit, EP-6 Economizer Pump Tank (NDT#2758), C-6 Conditioner Pump Tank, Accumulator Tank (NDT#2759), Conditioner Regenerator Tank	Condensate water, lead	Empty
2nd Floor	776-0010	48	Kathbar System, Units A&B	Condensate water, lead	Varies
118G	776-0018	81	FBI Production Unit, Tank (NDT#2476)	Methyl Alcohol	Empty
Outside	776-0045	81	Aboveground Diesel Fuel Tank	Diesel Fuel	Empty
ModLab	777-0003	49	Lapping Center	Beryllium	Empty
131	777-0018	4	Monarch Lathe (GB-605)	Oil, Carbon Tetrachloride & Pu Chips	Empty
131	777-0020	4	Machine Lathe (GB-612)	Carbon Tetrachloride	Empty
131	777-0021	5	Machine Lathe (GB-614)	Oil, Carbon Tetrachloride & Pu Chips	Empty
131	777-0023	5	Machining Box (GB-616)	Oil, Carbon Tetrachloride & Pu Chips	Empty
131	777-0025	5	Harding X-Lathe (GB-620)	Oil, Carbon Tetrachloride & Pu Chips	Empty
131	777-0026	5	Storage Box (GB-621)	Oil, Carbon Tetrachloride & Pu Chips	Empty
131	777-0027	6	Jig Bore (GB-626)	Oil, Carbon Tetrachloride & Pu Chips	Empty
131	777-0028	6	Small Lathe (GB-627)	Oil, Carbon Tetrachloride & Pu Chips	Empty
131	777-0029	6	Briquetting Press (GB-630)	Oil, Carbon Tetrachloride & Pu Chips	Empty
131	777-0031	6	Sheffield Sweep Gage & Storage Box (GB-632)	Carbon Tet., Freon TF, Lube Oils, Duct Sealers, Noucure 28 Catalyst or Polygel	Empty
131	777-0033	6	Five-Axis Mill (GB-636)	Oil, Carbon Tetrachloride & Pu	Empty
131, 430, 134A	777-0035	78	Carbon Tetrachloride Supply System	Carbon Tetrachloride	Empty
131, 415, 430, 437, 452	777-0037	78	TCA Supply System (Ultrasonic Cleaning Process)	TCA	Empty
134A	777-0038	11	Excello Lathe (GB-746)	Oil, Carbon Tetrachloride & Pu	Empty
134A	777-0039	11	Pneumo Lathe (GB-747)	Oil, Carbon Tetrachloride & Pu	Empty

Room	Idle Equipment Number	SET#	Description	Material	Quantity
134A	777-0040	11	Excello Lathe (GB-748)	Oil, Carbon Tetrachloride & Pu	Empty
134A	777-0041	11	Pneumo Lathe	Oil, Carbon Tetrachloride & Pu	Empty
134A	777-0042	10	Drill Press (GB-752)	Oil, Carbon Tetrachloride & Pu	Empty
430	777-0045	18	Equipment (GB-368)	TCA	Empty
430	777-0046	18	Freon Tank, Old Density Balance	TCA, Freon	Empty
430	777-0051	21	Ultrasonic Vapor Cleaner (including ancillary piping to first valve) (GB-426)	TCA	Empty
430	777-0054	22	Ultrasonic Vapor Cleaner (including ancillary piping to first valve) (GB-446)	TCA	Empty
430	777-0056	18	Ultrasonic Vapor Cleaner (including ancillary piping to first valve) (GB-465)	TCA	Empty
430	777-0057	24	Zeiss (GB-756)	Nyes Watch Oil, Carbon Tetrachloride	Empty
430	777-0058	24	Sheffield Sweep Gage (GB-758)	Freon TF, Lube Oil, Duct Sealers, Noucure 28 Catalyst or Polygel	Empty
437	777-0065	29	Grit Blasting Unit and Ultrasonic Cleaner (including ancillary piping to first valve) (GB-A2)	TCA, Metals from Blasting	Empty
437	777-0066	29	Ultrasonic Vapor Cleaner (including ancillary piping to first valve) (GB-A3)	TCA	Empty
440	777-0067	27	Ultrasonic Cleaner, TRIC Lines	TCA	Empty
447	777-0083	32	X-OMAT Processor Tank (NDT#2470)	Process Developer Replenisher	Empty
447	777-0084	32	X-OMAT Processor Tank (NDT#2471)	Fixer Replenisher	Empty
452	777-0090	35	Ultrasonic Vapor Cleaner (including ancillary piping to first valve) (GB-524)	TCA	Empty

6.3 Wastes Requiring Further Processing Prior to Off-Site Disposal

Most of the remediation waste generated during decommissioning will be the same or similar to routine waste for which there is a clear disposal path. However, as described below, certain LLM waste and TRU/TRM waste will require further processing prior to off-site shipment and disposal. At this time, the only treatment processes planned for Buildings 776/777 and/or 730 are processes identified in the RCRA Part B Permit and debris treatment, as described in Section 4.5.1.2. In the event additional treatment system(s) must be added to treat remediation waste in Building 776/777 or 730, this information will be included in a minor modification to this DOP.

6.3.1 LLM/TRM Wastes Managed Under the Site Treatment Plan

Unless treatment is otherwise specified in Section 6.3, above, the treatment of non-LDR compliant LLM process and remediation waste will be managed under the Site Treatment Plan (STP). Waste added to the STP will be reflected in inventories reported in the STP Annual Progress Report.

The following non-LDR compliant LLM and TRM remediation waste may be generated during decommissioning:

- Oils, liquids, and solids regulated by both TSCA and RCRA,
- Oils regulated by RCRA,
- Bypass and legacy sludges and wet slurries, and
- Waste chemicals including acids, bases, neutrals, and organic solutions.

As treatment paths and associated timetables are identified for these wastes, they will be included in the subsequent versions of the STP Progress Report.

6.3.2 TRU Sludges and TRU/TRM Oils

Certain TRU sludges in tanks and containers, and TRU/TRM oils will require processing to meet the WIPP WAC. The TRU sludges in tanks and containers include filter sludge (IDC 290), laboratory fluoride sludge (IDC 291), incinerator sludge (IDC 292), miscellaneous inorganic sludge (IDC 299), and sludge from the size reduction vault (IDC 340). These sludges will be dried and packaged for shipment to WIPP.

Some TRU/TRM oils that were used as coolants in machining operations in Building 776/777 are contaminated with solvents such as carbon tetrachloride and trichloroethylene. Currently, there is no disposal path for these oils.

6.5 **Waste Accumulation, Staging, Storage, and Treatment**

Wastes generated during decommissioning will be characterized and packaged in compliance with RFETS waste management procedures (Ref. 47), which implement disposal site WAC and DOT packaging requirements. Process and remediation waste that meets the definition of RCRA hazardous or mixed waste may be accumulated, stored, staged, and/or treated in or around the Building 776/777 Cluster in permitted storage and treatment units. Remediation waste may be treated or stored in temporary units approved by CDPHE. Unit-specific information will be submitted as a minor modification to this DOP as these temporary units become necessary. Such modifications will include the following information:

- Type of unit,
- Length of time the unit will be in operation,
- Volumes of remediation waste to be managed,
- Physical and chemical characteristics of the remediation waste to be managed,
- Potential for releases from the unit,
- Hydrogeological and other relevant environmental conditions at the facility that may influence the migration of potential releases, and
- Potential for exposure of humans and environmental receptors if releases were to occur.

Table 16 provides a summary of the routine treatment processes that may be conducted in temporary units during decommissioning activities in the Building 776/777 Cluster.

6.6 Waste Disposal

Facilities accepting process and remediation waste must meet the requirements of the CERCLA "off-site rule" (Ref. 48). The primary purpose of the "off-site rule" is to clarify and codify the CERCLA requirement to prevent waste generated from remediation activities conducted under a CERCLA action from contributing to present or future environmental problems at off-site waste management facilities. Only facilities meeting EPA's acceptability criteria may be used for off-site management of remediation waste.

6.7 Waste Minimization and Recycling

Waste minimization and recycling will be integrated into the planning and management of the remediation waste generated during decommissioning. Project management will incorporate waste minimization practices into work procedures. Unnecessary generation of sanitary, hazardous, LL/LLM, TRU/TRM, and TSCA waste will be controlled using work techniques that prevent the contamination of areas and equipment; preventing unnecessary packaging, tools, and equipment from entering radiological contaminated areas; and reusing contaminated tools and equipment when practical.

Standard decontamination operations and processes will be evaluated for waste minimization potential and suitable minimization techniques will be implemented. Property with radiological contamination or property containing hazardous materials may be reused or recycled onsite, offsite by other DOE facilities, or by publicly or privately owned facilities that have proper authorization for receiving it.

Recycling options that may be considered for decommissioning wastes are listed in Table 17. Materials will be recycled based on availability of appropriate recycle technologies, availability of approved facilities, and cost effectiveness. An estimated 3,900 m³ of structural rubble (i.e., concrete) will be generated during decommissioning. Concrete that meets the free-release criteria prescribed by the RFETS DDCP will be recycled as fill material to contour the land when decommissioning activities are completed. Concrete not meeting the free-release criteria will be disposed of at an approved disposal facility.

Table 16. Treatment Processes that may be Conducted in Temporary Units

	Treatment Process				
	Size Reduction	Filtration of Aqueous Wastes	Amalgamation of Radioactive Mercury	Crushing of Fluorescent Bulbs	Waste Solidification
Hazardous Waste Type	Various: Equipment, debris, lead, circuit boards, leaded glass	Various: Sludges from process waste equipment, paint chips in water	Radioactive elemental mercury	Fluorescent light bulbs	Various: Paint chips in water
EPA Codes	D005, D006, D007, D008	D005, D006, D008	D009	D009	D006, D008
Acceptance Criteria	Visual verification of waste type	Review of process information and visual verification of waste type	Visual verification of waste type	Visual verification of waste type	Review of process information and visual verification of waste type
Verification that Treatment Completed as Designed	Visual verification that waste fits into designated containers	Visual verification that aqueous solution is sufficiently free of solids to be treated in B374 or B891	Visual verification that no liquid elemental mercury remains	Operator knowledge that bulbs were broken and placed in designated container	Visual verification that the waste form is solid, the cement or encapsulant has cured
Estimated Treatment Capacity	20 cubic meters per day	55 gallons per batch	1 pint per batch	50 bulbs per batch	5 gallons per batch
Methods to Prevent Releases to the Environment	Provide ventilation measures to prevent air releases, provide secondary containment if any liquids are anticipated	Conduct treatment within secondary containment pans	Conduct treatment within containment pans	Break bulbs within sealed plastic bags or within solid containers (e.g., drums with filters)	Conduct treatment within containment pans
Inspection Method and Frequency	Visual inspection on operating days	Visual inspection on operating days	Visual inspection on operating days	Visual inspection on a weekly basis	Visual inspection on operating and curing days
Closure Methodology 1	Review operating history of TU to determine if any spills have occurred and if spills occurred, whether or not they were remediated				
Closure Performance Standard 1	Verify that no stains or residual waste from the treatment process are visible in or on the unit.				
Closure Methodology 2	Remove and package for disposal any residual waste, the treatment unit itself, and associated pans or equipment				
Closure Performance Standard 2	Package treatment unit and waste for disposal per site procedures.				
Closure Methodology 3	Rinse or use an extraction technology to clean the surface of equipment of residual waste staining.				
Closure Performance Standard 3	Rinsate standard or clean debris surface standard as described in Section 4.5 of this DOP.				

Table 17. Material Recycling Options

Waste Stream	Recycle Option	Comments
"Clean" scrap metal (not radioactively contaminated and not considered hazardous in accordance with RCRA)	Recycled through approved scrap metal vendors or via contract.	Material must meet receiving facility's WAC.
Radioactively contaminated scrap metal	Recycled by means of metal melt process vendors or contract.	Material must not exceed contamination types and levels identified in the receiving facility's WAC.
Mixed scrap material (radioactively contaminated scrap metal mixed with hazardous constituents)	None	Currently trying to locate and approve facilities that can manage this type of waste.
Clean building rubble/debris	Proposed reuse as backfill; not yet an approved option.	Must meet criteria to be established in RFCA Standard Operating Protocol.
Clean wiring and other electrical components.	Recycled through approved commercial facilities.	Material must not exceed contamination types and levels identified in the receiving facility's WAC.
Clean bulk plastics and glass	Recycled through approved commercial facilities.	Material must not exceed contamination types and levels identified in the receiving facility's WAC.
Used lead acid batteries	Recycled through approved commercial recycling facilities	Material must meet receiving facility's WAC.
Used oil	Recycled through approved commercial fuel blending facilities.	Material must meet receiving facility's WAC.

7.0 APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

To the maximum extent possible, decommissioning activities must comply with the Applicable or Relevant and Appropriate Requirements (ARARs) under the Comprehensive Response Compensation and Liability Act (CERCLA) (Ref. 49). ARARs have been identified for the complete scope of decommissioning activities, including demolition. The ARARs are listed in Appendix E.

Pursuant to ¶16 and ¶17 of RFCA, the procedural requirements to obtain federal, state, or local permits are waived as long as the substantive requirements that would have been imposed by the permit process are identified. Furthermore, the method used to comply with the substantive requirements must be explained. The permits that will be waived for decommissioning activities in the Building 776/777 Cluster are the RCRA Part B permits for storage, treatment, and temporary units. The methods used to meet the substantive requirements imposed by the permit process are described in Sections 4.5, 6.1 through 6.6, and 7.3 through 7.5.

The following paragraphs describe how the ARARs will be applied to decommissioning activities in the B776/777 Cluster. They are intended to complement other descriptions in the DOP in a manner that satisfies the RFCA permit waiver requirements.

7.1 Air

Closure activities have the potential to generate particulate, radionuclide, fugitive dust, and hazardous air pollutant emissions. Subpart H of 40 CFR 61 contains the requirements for monitoring and reporting activities within DOE facilities that have the potential to emit radionuclides other than radon. Building 776/777 is subject to effluent monitoring of radionuclides due to holdup in ducts and GBs. 5 CCR 1001-3, Regulation No. 1, (Ref. 50) governs opacity and particulate emissions. Regulation No. 1, Section II, addresses opacity and prohibits stack emissions from fuel-fired equipment exceeding 20% opacity. Regulation No. 1, Section III, addresses the control of particulate emissions. Fugitive particulate emissions will be generated from demolition and transportation activities. Control methods for fugitive particulate emissions should be practical, economically reasonable and technologically feasible. During demolition activities, dust minimization techniques, such as water sprays, may be used to minimize suspension of particulates. In addition, demolition operations will not be conducted during periods of high wind. The substantive requirements will be incorporated into a control plan that defines the level of air monitoring and particulate control for the project.

5 CCR 1001-3, Regulation No. 3, (Ref. 51), provides CDPHE with the authority to authority inventory emissions. Regulation No. 3, Part A, describes Air Pollutant Emission Notice (APEN) requirements. If applicable, RFETS will prepare an APEN to facilitate the CDPHE inventory process.

7.2 Solid Waste

At this time, a site-wide strategy for managing remediation waste has not been finalized. As a result, during the early stages of decommissioning, hazardous and mixed wastes will be managed in compliance with the substantive and administrative requirements of RCRA/CHWA, the

CHWR, and the RFETS RCRA Part B Permit. Once the remediation waste management strategy has been finalized, this information will be provided to the LRA in a minor modification to this DOP, consistent with the waste management requirements of the DPP.

Non-radioactive, non-hazardous wastes will be managed in compliance with the substantive requirements of CDPHE regulations pertaining to solid waste management and disposal (6 CCR 1007-2), (Ref. 52). If necessary, remediation waste may be treated under the TU substantive requirements established in 6 CCR 1007-3, Part 264.553. Incompatible waste, if encountered, will be segregated within the units. An assessment will be performed to determine the need for secondary containment. Secondary containment will be provided, as appropriate, when liquid waste is stored or treated in tanks or containers. Wastes will be characterized, as appropriate, in accordance with the substantive requirements of 6 CCR 1007-3, Part 261, and 40 CFR 761. When tanks are physically empty, berms providing secondary containment will be removed to facilitate equipment removal.

7.3 Treatment

During decommissioning, treatment may be conducted under two separate scenarios:

1) Routine Treatment

- Generator treatment conducted in accordance with 6 CCR 1007-3, Part 268, will be the most common type of treatment during decommissioning.
- Treatment in accordance with the RCRA Part B Permit may be conducted for those wastes that cannot be treated under the generator requirements.

2) Debris Treatment

- Debris treatment may be conducted where similar types of debris are generated.

7.3.1 Routine Treatment

Routine treatment includes generator treatment and treatment in accordance with the substantive requirements of 6 CCR 1007-3 and the RCRA Part B Permit. Section 6.5 describes how the substantive requirements for generator treatment and treatment under the Part B permit will be applied to routine waste treatment.

7.3.2 Debris Treatment

Debris treatment will be conducted in accordance with steps outlined in Sections 4.5.1.2 and 6.5 of this DOP. Waste resulting from the treatment of debris will be managed in accordance with the waste management ARARs. Waste resulting from the treatment of listed debris will carry the same listing as the listed debris from which it originated. Liquid waste that meets the applicable acceptance criteria will be treated in Building 374 or the Site sewage treatment plant.

7.4 Wastewater

Wastewater generated from decommissioning activities will be collected and characterized to determine the appropriate disposal path. Domestic water; non-hazardous, non-radioactive, non-domestic water (i.e., cooling tower water and boiler blowdown); and non-hazardous, non-radioactive internal waste streams generated during decommissioning will be transferred to the Site sewage treatment plant for processing. Hazardous and/or radioactive wastewater that meets the acceptance criteria of the Building 374 treatment facilities will be collected and transferred to Building 374 for treatment. Hazardous and/or radioactive wastewater that does not meet the acceptance criteria of the Site sewage treatment plant or Building 374 treatment facilities will be managed in temporary units authorized by CDPHE (see Section 6.5).

7.5 Asbestos Containing Material

ACM will be managed in accordance with 5 CCR 1001-10, Regulation 8. Specifically, Section III, C.7.6, provides maximum allowable asbestos levels and sections C.8.2(b), (d) and (f) provide requirements for handling asbestos waste materials.

7.6 Polychlorinated Biphenyls

PCBs will be managed in accordance with the substantive requirements of 40 CFR Part 761, Disposal of Polychlorinated Biphenyls. Radiologically contaminated PCBs will be managed in conformance with applicable Federal Facilities Compliance Agreement (FFCA) requirements until a final storage facility is approved.

7.7 Migratory Birds

Closure activities may impact migratory birds protected by the Migratory Bird Treaty Act (Ref. 53), and the Fish and Wildlife Conservation Act (Ref. 54). Due to the variations in potential impacts depending upon the season and the nesting schedules for migratory birds, the substantive requirements of these federal statutes, as they apply to federal facilities, will be evaluated prior to conducting the actions associated with decommissioning. The substantive requirements identified during the evaluation will be implemented in accordance with the statutes and associated regulations.

This page intentionally left blank

8.0 ENVIRONMENTAL CONSEQUENCES OF ACTION

The following paragraphs summarize the results of the environmental impact analysis, which was performed for the full scope of the Building 776/777 Closure Project. The environmental consequences of the entire project are considered from the beginning to ensure the cumulative impacts resulting from each stage of the project are acceptable. This analysis will be revised, as necessary, in the demolition modification to this DOP, which will address the disposition of building slabs.

8.1 Environmental Impact Issues

As described in earlier sections, Buildings 776/777 and 730 are located entirely within the Protected Area of the Site's Industrial Area (ref. Figure 3). Initial investigations show that many interior surfaces, process drains, piping, GBs, filters, sumps, and other equipment are radioactively contaminated.

The proposed closure activities for Building 776/777 include asbestos abatement; decontamination of interior surfaces and equipment by vacuuming and wiping; disconnection of electrical power; draining of piping systems and equipment; removal of GBs and other equipment; further decontamination by wiping, washing, scabbling, and other methods; and dismantling and demolition of the buildings. Proposed closure activities for Building 730 include decontamination and removal of equipment. Given the existing environment and industrial setting, environmental impact issues associated with the Building 776/777 Closure Project are relatively limited. The proposed activities should not result in discernible long-term adverse effects to biological resources, including vegetation, wetlands, wildlife habitat, and state and federal sensitive (e.g., threatened and endangered) species populations or habitat. The buildings to be closed are not located in a floodplain and the proposed activities will not affect or be affected by any floodplain. No wild and scenic rivers, prime agricultural soils, parks, or conservation areas will be affected. The proposed activities will provide employment for a limited number of people, most from the current Site work force. Thus, the activities are unlikely to result in adverse socioeconomic effects. The removal of the buildings will not be noticeable off site and will not result in major visual changes.

Therefore, the discussion of impact issues focuses on other areas of potential environmental impacts in addition to potential worker and public impacts. These impacts are as follows:

- Mobilization of radioactive and other contaminants into soil, air, surface water, or ground water;
- The H&S of workers who may be exposed to radioactive, toxic or hazardous materials (including lead, asbestos, and PCBs), and the H&S of the public, resulting from normal closure activities as well as accidents;
- The physical removal of Building 776/777 as an historic structure eligible for the National Register of Historic Places and a secondary contributor to a potential Historic District comprised of Cold War Era facilities at Rocky Flats; and
- This project's contribution to site-wide cumulative impacts.

8.2 Relative Impacts

As summarized in Table 18 and discussed in this section and in Section 3, the different alternatives have relative impacts on the Site and the surrounding area. Information presented in Table 18 is based on the Cumulative Impact Document (CID) coverage of relative impacts on environmental consequences and DOE policy to the extent practicable. Supporting documentation for this table can be found in Section 3.

8.3 Geology and Soils

Decommissioning activities in the Building 776/777 Closure Project will disturb minor land acreage, most of which has been previously disturbed. There will be a short-term increase in soil erosion and siltation surrounding building drainage pathways. Small, temporary losses of soil productivity may occur from construction activities and vehicle movement. Volatile organic compounds and radionuclide contamination already exist in the Building 776/777 footprint and adjacent areas. Additional contamination of soil from closure activities is not expected because building structures will be decontaminated or contamination will be fixed before the structures are demolished.

8.4 Air Quality

Potential impacts to air quality resulting from the closure of Buildings 776/777 and 730 include:

- Asbestos,
- Be and radionuclide emissions resulting from the decontamination and removal of equipment and building material,
- Hazardous air pollutants from the removal of waste oil collection and organic solvent tanks, and
- Fugitive dust emissions resulting from transportation activities associated with the closure and demolition activities.

Air emissions from these activities will be controlled and monitored in accordance with the Site H&S Program and air quality ARARs presented in Section 7. Controls to be used for individual decommissioning projects will be selected during the planning and engineering phase of the IWCP process and described in the associated IWCP work packages.

Asbestos is present in several areas, primarily in the form of pipe insulation. This material will be removed in accordance with applicable state and federal regulations. There is minimal risk of an asbestos release to the air if the removal, transportation, and final disposition is in accordance with applicable regulations.

Table 18. Comparison Summary of NEPA Relative Impacts

Consequences	Decommissioning	No Action With Safe Shutdown	Reuse
1. Human Health			
<i>Consequences include radiological and non-radiological safety for workers and public</i>			
1.1 Radiological for workers and public	Annual exposures are expected to decline once the facility is decontaminated. Specific information is contained in section 8.5.	As the facility continues to age, the potential release of contamination within the building increases over time due to the levels 279 production GBs, connecting stations, and conveyors.	Significant radiological contamination exists from the 1969 fire, 279 production GBs, connecting stations, and conveyors.
1.2 Non radiological for workers and public	Hazards will increase until closure is completed, then fall below any substantial hazard level. Specific information is contained in section 8.6.	Hazards will continue to exist and as the facility ages additional hazards will increase. Be, lead, heavy metals, asbestos, and chemicals exist that would be extremely difficult to stabilize.	Hazards will continue to exist and as the facility ages additional hazards will increase. Be, lead, heavy metals, asbestos, and chemicals exist that would be extremely difficult to stabilize.
2. Worker Safety			
<i>Consequences include H&S issues for the worker and the environment</i>	Hazards will increase until closure is completed, then fall below any substantial hazard level.	Identified hazards will continue to exist. Breaches to equipment from age will cause release of contaminants subjecting the worker to additional hazards.	Identified hazards will continue to exist. Breaches to equipment from age will cause release of contaminants subjecting the worker to additional hazards.
3. Environment			
<i>Consequences include environmental, socioeconomic, and cumulative impacts</i>	These consequences will decrease once remediation is complete. The proposed activities should not result in discernible long term adverse effects to biological resources, including vegetation, wetlands, wildlife habitat, and state and federal sensitive (e.g., threatened and endangered) species populations or habitat. Specific information is outlined in sections 8.1, 8.2, 8.3, 8.7, 8.8, 8.10, 8.11, 8.12, 8.13.	Identified hazards will continue to exist and as the facility ages additional hazards will increase.	Identified hazards will continue to exist. Breaches to equipment from age will cause release of contaminants subjecting the worker and the environment to additional hazards.

Decontamination, size reduction, removal, and ultimate disposal of equipment and materials in Buildings 776/777 and 730 have the potential to release radionuclides and residual chemical vapors to the air. Decontamination and size reduction activities take place within containment (either GB, B-box, or hood) equipped with HEPA filters. In addition, the building room exhaust is equipped with HEPA filters.

Rad-National Emission Standards for Hazardous Air Pollutants (NESHAP) [40 CFR 61, Subpart H, (Ref. 55)] requires that air emissions be monitored from any source having estimated uncontrolled radioactive air emissions that exceed 0.1 mrem/ year effective dose equivalent to any member of the public. Many of the decommissioning activities have a potential for uncontrolled radionuclide air emissions that exceed the 0.1 mrem/year monitoring threshold. As necessary, monitoring will be performed utilizing the existing effluent stack monitors, the existing Radioactive Ambient Air Monitoring Program network, and/ or project-specific air monitoring methods described in the Site Integrated Monitoring Plan. Building ventilation will be modified to utilize existing monitored plenum systems to satisfy monitoring requirements, if necessary.

8.5 Water Quality

The Building 776/777 Closure Project activities are not expected to change storm water runoff, surface water flow characteristics, or ground water. This is because no buildings will be removed below ground level and for reasons discussed below.

Potential impacts to storm water runoff resulting from closure activities include the release of liquids via drains or doors that have direct access to the outdoor environment. It is unlikely this will happen since the IWCP/ISM process discussed in Section 5 will be used. Decommissioning activities that may lead to the release of liquids will be identified to ensure drains and/or doorways are appropriately blocked.

Techniques under consideration for decontamination of the Building 776/777 equipment include the use of water or steam to remove radiological contamination and loose debris. This decontamination technique would be used while the building shell and utility support systems are still intact. While this technique is effective in removing radiological contamination, it may also generate large volumes of potentially contaminated water and may even contribute to the spread of radiological contamination inside the building. Contaminated water will be sampled before release or transfer to Building 374. Ground water should not be affected since no work will be performed outside the facility or below ground level.

Because portions of ancillary structures off ground level (e.g., cargo containers) will be removed, some new bare ground is expected to be exposed to wind and water erosion, and surface water flow characteristics may be impacted. If appropriate, silt fencing or a similar protective device may be installed to prevent or minimize the possibility of water-borne soil leaving the immediate area and entering drainage ways.

8.6 Human Health Impacts

Because the nature of closure work is to remove or fix contamination in place, closure activities have the potential to expose involved workers, non-involved workers, and the public to radiological and other chemical contamination. Disturbance of contaminants or hazardous materials increases the

chance of the contaminants or materials to be dislodged, become airborne, and be inhaled by or deposited on humans.

8.7 Radiological Impacts to Workers and the Public

Radiological dose calculations for the public and workers are based on information in the Rocky Flats CID (Ref. 56). The CID radiological dose calculations are based on a 100,000 square foot generic Pu processing facility representative of Pu processing facilities at RFETS. In comparison to the generic facility, Building 776/777 is approximately 224,600 ft². As a result, the dose rates to the workers and public in the CID have been proportionately scaled up to estimate worker and public health impacts for Building 776/777. No other adjustments are needed because the assumptions used for the CID calculations were similar to conditions for Building 776/777 closure (i.e., work crew sizes, activities, and schedules are similar in both cases).

For involved workers, closure activities in Building 776/777 are estimated to result in a total dose of 132 person radiation equivalent man (rem). This exposure is expected to result in less than one (0.05) latent cancer fatalities, assuming the same worker group of 24 people conduct both deactivation and decommissioning activities. This is a conservative estimate since work crews will be assigned so individual workers will be protected in accordance with the Site's 750 mrem per year individual dose administrative control level. Doses to co-located workers from closure operations in Building 776/777 alone have not been evaluated. However, the annual radiological exposure of a maximally exposed co-located (unprotected) worker as a result of site-wide closure activities is estimated at 5.4 mrem (a mrem is 1/1000 of a rem). The corresponding risk of a latent cancer fatality to this worker is two in 1,000,000 (CID, Section 5.8.1 [Ref. 56]).

Annual dose to the maximally exposed off-site individual from Site closure activities is estimated at 0.23 mrem, with a corresponding excess latent cancer fatality of 1 in 10,000,000. The annual dose to the public as a result of all activities in the RFETS Closure Project at the peak time of exposure (1997 - 2006), is expected to be a total of 23 rem for the 2.7 million people projected to be living within 50 miles of the Site in 2006. This annual dose of 23 person-rem is expected to result in less than one (0.01) latent cancer fatality in the entire Denver area population. Estimated annual dose to the maximally exposed off-site individual is well below the applicable standard of 10 mrem/year (CID, Section 5.8.2, [Ref. 56]).

Estimated doses to the maximally exposed offsite individual from the Building 776/777 Closure Project are expected to be a small fraction of the estimates for site-wide activities, as described above. For comparison purposes, the DOE annual limit for occupational exposure as a result of all activities and through all exposure pathways is 5,000 mrem (5 rem) per person. Natural background radiation in the Denver area results in an annual exposure of approximately 350 mrem per person. Exposures to workers and the public will be controlled and monitored in accordance with the RFETS Radiation Safety Program.

8.8 Non-Radiological Health Impacts

Non-radiological health effects from exposure to chemicals are measured by a hazard index. A hazard index greater than one is considered to be a basis for concern, and the greater the index is above one, the greater the level of concern.

For the full suite of Site closure activities, including closure of all buildings, a hazard index of 1.2 has been calculated for a co-located worker who is chronically exposed during working hours to all chemicals of concern simultaneously (as described in the CID, (Ref. 56]) over the entire period of Site closure. The corresponding cancer risk is five in 100,000 (CID Section 5.8.3, [Ref. 56]). For the full suite of Site closure activities, including closure of all buildings, a hazard index of 1.5 has been calculated for a member of the public who is chronically exposed every day for 70 years to all chemicals of concern (as described in the CID) simultaneously (a highly unlikely event). A more reasonable scenario of exposure to a single chemical showed hazard indices of well below one for each potentially released chemical. Analysis of potentially carcinogenic air pollutants indicates a cancer risk of three in 10,000,000 for the maximally exposed off-site individual (CID Section 5.8.4, [Ref. 56]).

Estimated non-radiological impacts from the Building 776/777 Closure Project are expected to be a fraction of those estimated for site-wide activities, as described above. Exposures to workers and the public will be controlled and monitored in accordance with the RFETS toxic/hazardous materials and chemical safety program.

8.9 Occupational Hazards

In addition to exposure to radiological and chemical hazards, workers at the Site are exposed to a variety of industrial hazards such as heavy machinery, repetitive motion tasks, and physical agents such as heat and cold. Using a general industry rate for construction to estimate injury and illness cases, Site closure activities are estimated to result in 584 cases of injury and illness during the peak activity period (1997 through 2006), (CID, Section 5.8.3, [Ref.56]). The portion of these cases estimated to result from the Building 776/777 closure alone would be less than the total Site figure.

The general industry rate of injury and illness is considerably higher than the historic incidence rate for the Site. Occupational hazards will be controlled, mitigated, and monitored in accordance with the RFETS occupational health and industrial safety programs.

8.10 Plants and Animals

Because the Building 776/777 Closure Project is located in the previously disturbed Industrial Area, impacts to plants and animals are expected to be minimal. Possible minor impacts to other vegetative areas may result as fugitive dust may distribute undesirable materials among existing plant species. Additional impacts may occur to vegetation due to increased traffic involving closure equipment. Increased traffic, both vehicular and pedestrian, could result in some vegetation disturbance.

Some mammals such as rats, mice, rabbits and raccoons are known to be residents of or visitors to the Industrial Area. These mammals will be displaced, and some mortality will occur as a result of

closure activities. Bird nests attached to buildings planned for demolition will be destroyed. Due to the proximity Building 776/777 to the segment of Walnut Creek drainage located in the Protected Area, this action may generate dust and sediment runoff that could reach the creek. The activities may therefore require consultation with the U.S. Fish and Wildlife Service for downstream impacts to the Preble's meadow jumping mouse habitat. The Preble's meadow jumping mouse is a federally-listed threatened species under the Endangered Species Act (Ref. 57). Mitigation measures will be determined in consultation with the U.S. Fish and Wildlife Service.

8.11 Waste Management

Environmental impact issues associated with waste management are related to human health issues, storage capacities, and transportation. In general, waste generated from the Building 776/777 Closure Project will include contaminated and uncontaminated equipment, tools, electrical conduit systems, piping systems, GBs, and facility structural materials.

Items not radiologically contaminated or those decontaminated to a free-release condition may be transferred for use at a different location within RFETS, for use at a different DOE facility, or sent to the PU&D organization for appropriate handling. Items that cannot be decontaminated to a free-release condition will be managed as waste, or reused onsite or at another DOE facility in accordance with applicable release criteria. On-site storage of mixed waste will be in accordance with approved Site procedures until the material can be shipped for off-site disposal. Waste will be characterized, stored, and disposed of in accordance with the requirements of approved Site waste management procedures that meets federal and state regulations.

Waste minimization will be practiced in the planning and management of the Building 776/777 Closure Project waste. Elimination and reduction of waste generated as a result of closure is a high priority. Standard decontamination operations and processes will be evaluated for waste minimization potential and suitable minimization techniques will be implemented.

8.12 Historic Resources

The impacts related to historical resources are the loss of Building 776/777 as an historic structure eligible for the National Register of Historic Places, and a secondary contributor to a potential Historic District comprised of Cold War Era facilities.

Sixty-four buildings within the Site's Industrial Area, including Building 776/777, have been identified as important to the historic role of the Site in manufacturing nuclear weapons components during the Cold War. Building 776/777 was originally constructed in 1951, with a number of additions between 1962 and 1974. While this building, like the others, is less than 50 years old, it is considered historically significant as an essential component of the weapons production activities at Rocky Flats.

Negotiations have been completed between DOE and the State Historic Preservation Officer (SHPO) concerning the appropriate mitigation measures that apply to these buildings. As a result, Building 776/777 will be subject only to documentation requirements (collection or creation of construction drawings and photographs), rather than preservation. However, the building may not be modified or damaged before completion of documentation, per standards accepted by the SHPO.

8.13 Noise

Closure and demolition of Buildings 776/777 and 730 are not expected to significantly increase noise levels in the Rocky Flats area. Most activities will take place inside the associated buildings so noise levels, if elevated over ambient levels, will be confined to the Building 776/777 Closure Project structures in which they are generated. Other less common activities, such as scabbling, abrasive blasting, and demolition by backhoe, hydraulic cutters, or other devices are expected to generate noise levels higher than ambient noise levels. Workers involved in these activities will use appropriate hearing protection devices. Outdoor activities will take place at a distance from unprotected workers and the public, and are not expected to increase noise levels to an unsafe level.

8.14 Socioeconomic Effects

Potential impacts from the Building 776/777 Closure Project will contribute to a net overall loss of employment in the long run. The current on-site work force in the building will either be drawn into the closure activities for the building (and potentially for the entire Site) or voluntarily terminate employment. In the short run, closure activities may increase the employment level due to increased needs. Additionally, a modest increase of purchases (raw materials, etc.) may result.

Under the worse case scenario, if the entire work force currently housed in the Building 776/777 Cluster opts to terminate employment, the overall impact will not have a significant adverse effect on the Denver Metropolitan area, including Boulder and Jefferson Counties, where the majority of the work force resides. The net effects of demolishing Buildings 776/777 and 730 are expected to be minimal.

8.15 Cumulative Effects

Impacts associated with the Building 776/777 Closure Project will contribute incrementally to potential site-wide cumulative impacts associated with the overall RFETS Closure Project. Cumulative impacts are impacts to the environment resulting from the incremental impacts of an action when added to other past, present, and reasonably foreseeable future actions. Significant impacts could result from several smaller actions that, by themselves, may not have significant impacts. The cumulative effects of Site cleanup efforts are described in the CID (Ref. 56). That document describes the short- and long-term effects from the overall Site clean up mission.

Cumulative impacts of the Building 776/777 Closure Project relative to the Site closure will include:

- Decommissioning activities associated with the Building 776/777 Closure Project will generate sanitary, hazardous, TSCA, LLW, LLM, TRU, and TRM wastes. Existing on-site interim storage for radioactive waste is limited and eventually, as site-wide closure progresses, additional storage capacity may be needed. The same is true for sanitary waste.
- Increased traffic volume, resulting from off-site shipments of Pu components and waste, may cause congestion problems, an increase in traffic accidents resulting in fatalities, and an increase in potential latent cancer illnesses related to motor vehicle emissions and fugitive dust.

- Adverse socioeconomic impacts from reductions in the Site's workforce will not substantially affect the surrounding region due to additional growth projected in the area.

Some cumulative impacts may ultimately be beneficial to the environment. Remediation is currently scheduled to follow demolition of buildings in the Cluster, which may result in the restoration of some of the Site to its original, natural condition.

- Removing human occupation, structures and paved surfaces and re-establishing native grasses and other vegetation could restore native plant communities and increase wildlife habitat, including threatened and endangered species.
- Cleaning up contamination will reduce health risks to human and animal populations.
- High profile structures that have dominated the Site and the local skyline for 45 years will be eliminated. The landscape will take on a less industrial and more open, rural appearance, similar to the rangeland that characterized the area before buildings on the Site were constructed.

8.16 Mitigation Measures

Mitigation measures are prescribed to reduce or avoid potentially adverse effects associated with a proposed activity. For the decontamination and closure of the Building 776/777 Cluster, mitigation measures will be considered in the areas of human health, worker safety, release of emissions and mobilization of contaminants, and cultural resources.

Closure will be conducted in accordance with applicable worker and public H&S programs; activities will be managed so that emissions and discharges are within applicable regulatory limits. Closure will take place within containment of existing buildings or temporarily constructed facilities (e.g., tents) with functioning drainage, air filtration, and other safety and environmental protection systems commensurate with risks inherent in the activities being conducted.

Precautions will be taken to ensure compliance with the Migratory Bird Treaty Act (Ref. 58), which prohibits destruction of birds or their nests, active or inactive, without a permit. Building demolition or dismantlement activities that would destroy nests will not be conducted during the nesting season, or measures will be taken to avoid affecting nesting birds prior to the nesting season. Activities that may effect nesting birds will be coordinated with Site ecologists. No closure activities will take place in or near the habitat of known threatened or endangered species.

No modification or damage to buildings determined to be eligible for the National Register of Historic Places will occur prior to completion of the documentation requirements in accordance with the standards set forth in the Memorandum of Agreement with the SHPO.

8.17 Unavoidable Adverse Effects

If conducted as proposed, the Building 776/777 Closure Project will have the following unavoidable adverse effects:

- Physical removal of an historic structure that is eligible for the National Register of Historic Places and a secondary contributor to a potential Historic District comprised of Cold War Era facilities;
- Short-term increases in air emissions and water discharges;
- Radiation and chemical exposures to workers, co-located workers, and the public, resulting in a small, but increased risk of adverse health effects;
- Possible industrial accidents, resulting in injury and illness; and
- Increased noise levels for the duration of closure activities.

8.18 Short-Term Uses and Long-Term Productivity

Unlike most projects that commit a site to a particular use for a period of time, the effect of closure will be to undo past commitments concerning use of the Site and open up a new and broad range of potential future uses. Closure does not commit the Site to a particular land use; rather, closure of the Building 776/777 Cluster will be one step in the process of ending one use and opening consideration for a variety of other possible future short- and long-term uses.

8.19 Irreversible and Irretrievable Commitments of Resources

Funds, labor, equipment, fuel, tools, PPE, waste storage drums, and similar items are resources that will be irretrievably committed to the Building 776/777 Closure Project.

9.0 QUALITY ASSURANCE

9.1 Background

The work performed under this DOP shall be accomplished in accordance with regulatory, EPA, and contractual QA requirements. The regulatory requirements are 10 CFR 830.120, Quality Assurance Requirements (the QA rule) (Ref. 59). The EPA requirement is American National Standards Institute (ANSI)/ASQC-E4, (Ref. 60). The contractual requirement is DOE Order 5700.6C, Quality Assurance. The technical requirements are embodied in ten criteria that are virtually the same in 10 CFR 830.120 and DOE Order 5700.6C. The difference between the two documents is scope and enforceability. 10 CFR 830.120 applies to activities that have the potential to cause radiological harm and is enforceable through fines and penalties; DOE Order 5700.6C applies to non-nuclear activities and is a contractual obligation. ANSI/ASQC-E4 differs from the 10 CFR 830.120 and DOE Order 5700.6C in that it has more detailed requirements for data usability and assessment and control of computer hardware and software.

The application of these requirements to a facility that is undergoing project closure is graded and will diminish as the facility moves closer to the final project endpoint. The purpose of this section is to provide strategic principles and guidance on the application of QA requirements to a facility undergoing project closure where the safety significance of activities and the magnitude of risk associated with the facility are decreasing over time.

10 CFR 830.120, DOE Order 5700.6C and ANSI/ASQC-E4 are implemented through the QAP and the QAP Description (Ref. 61). The QAP Description defines the RFETS requirements that are employed to deliver consistent decommissioning services.

9.2 Quality Criteria

What follows is a discussion of each of the 10 criteria of the QA rule (10 CFR 830.120), DOE Order 5700.6C, and applicable elements of ANSI/ASQC-E4. A comment section is included, articulating guiding principles and examples for reducing the formality and intensity of application of quality requirements toward the completion of the Building 776/777 Closure Project.

Quality Criterion

**Document/Procedure that
Implements/Satisfies the Criterion**

1) Quality Programs

K-H QAP
Price Anderson Amendments Act Program
(1-MAN-022-PAAAPROG)
Management Control System (F&A-MCS-001)
Preparation of QA Program Plans
(1-C40-QAP-02.01)
RMRS QAP Policy
RMRS QAP Description (RMRS-QAPD-001)

Comments: A written QA program must be established, implemented and maintained to describe the organization, roles, and responsibilities of those managing, performing and assessing the adequacy of work. The QA rule and 5700.6C allow contractors latitude in grading the appropriate quality levels of control based on factors such as the form and magnitude of the (remaining) hazard, the life cycle stage of the facility, and the mission of the facility. As the scope and risk decrease during the closure process, the level of rigor and intensity of quality requirements may be adjusted and implemented via revisions to the applicable QA Program documents and implementing procedures.

2) Personnel Training and Qualification

K-H Training User Manual
K-H Training Implementation Manual
RMRS Training Manual (RF/RMRS 97-040)
Instruction for Tracking/Scheduling Training
and Qualifications and Retention of Records
for Training (RMRS INSTR.003)
Development, Use and Control of List of
Qualified Individuals (RMRS INSTR.004)
Identifying Training and Qualification
Requirements (RMRS INSTR.005)
Development and Use of Qualification
Documents (RMRS INSTR.006)
Development and Use of Training
Implementation Plan (RMRS INSTR.007)
Design/Development of Training Materials
(RMRS INSTR.011)
Operating Organization Requirements for
Continuing Training Programs (RMRS
INSTR.013)
RMRS Qualification and Certification of QA
Personnel (RMRS-QA-02.01)

Comments: Personnel performing work shall be trained and qualified based on project-specific requirements prior to the initiation of the Building 776/777 Closure Project. The K-H Training Users Manual and Training Users Matrix provide guidelines for contractors to implement training instructions for RFETS facilities. The documents listed above specify requirements for

qualification or certification of personnel performing specialized activities. The referenced programs are used to identify the positions that require formal qualification and certification (and continuing training). Examples of specific training classes identified for decommissioning workers are as follows: nuclear criticality safety and support, hazardous waste operations, waste generator, Be operations, and electrical safety. As job requirements change, the need for retraining to ensure continued job proficiency will be evaluated.

3) Quality Improvement

Site Corrective Action Requirements Manual
(1-MAN-012-SCARM)
Site Integrated Oversight Manual
(1-MAN-013-SIOM)
Site Lessons Learned/Generic Implications
Requirements Manual (1-S27-ADM-16.18)
Stop Work Action (1-V10-ADM-15.02)
Occurrence Reporting Process
(1-D97-ADM-16.01)
Performance Indication and Trend Analysis
(1-E93-ADM-16.18)
Control of Non-conforming Items
(1-A65-ADM-15.01)
Control of Waste Non-conformances
(2-U76-WC-4030)
RMRS Corrective Action (RMRS-QA-.03.01)
RMRS Conduct of Surveillance
(RMRS-QA-10.02)

Comments: The processes used to detect and prevent problems and to ensure quality improvement are referenced here. As decommissioning activities are initiated, a graded approach will be used to determine the significance of issues and to determine which corrective actions will be managed in the Plant Action Tracking System. As systems, including VSS, components, and structures are declared out-of-service, the use of the Non-conformance Report process will be greatly reduced.

4) Documents and Records

Site Documents Requirements Manuals
RMRS Document Control Program
(RMRS RM-06.01)
Correspondence Control Program
(1-L43-IMS-001)
Records management Guidance for Records
(1-V41-RM-001)
RMRS Records Identification, Generation and
Transmittal (RMRS RM-06.02)
RMRS Records Receipt, Processing, Retrieval
and Disposition (RMRS RM-06.03)
Administrative Record Document
Identification and Transmittal
(RMRS RM-06.04)

Comments: Documents that are used to describe how decommissioning activities are to be accomplished, documents that produce quality affecting data, and documents that support a RFCA (Ref 2) decision or deliverable will be Controlled Documents. A diminishing level of control will be implemented for documentation as the 776/777 Closure Project progresses. A records management program has been established to ensure that records are specified, prepared, reviewed, approved, authenticated, legible, transferred, collected, maintained, stored, retained, and indexed for accountability and retrievability (see Appendix C for list of generic Administrative Record, project and QA records).

5) Work Processes

Configuration Change Control Program
IWCP Manual
COOP Manual
(Man-066-COOP)
Site Documents Requirements Manual
(1-MAN-013-SDRM)
ISM Manual (1-MAN-016-ISM)
Radiological Control Manual
Radiological Safety Practices Manual
HSP Manual
Radiation Protection Program Procedure
(1-Q50-RPP-0001)
Preparation and Control of RMRS Documents
(RMRS-QA-05.01)
QA Review of RMRS Documents (RMRS -
QA-05.02)
RMRS QAP Description (App. 3)

Comments: Closure activities are performed according to approved planning and technical documents and according to the prescribed sequence defined during planning when appropriate and stated. The number of procedures/instructions for activities associated with the Building 776/777 Closure Project will be commensurate with the level of activity, complexity, risk and lifecycle stage of the closure. Additional references are included in this section for the use of computer hardware and software and assessment of data usability as prescribed in ANSI/ASQC-E4.

6) Design

Configuration Change Control Program
Manual

COEM (Design Process Requirements-
COEM-DES-210)

Computer Software Management Manual
(1-MAN-004-CSMM)

Operation Review Committee Requirements
(1-52000-ADM-02.01)

RMRS USQD Process (1-C11-NSM-04.05)

Comments: Sufficient engineering design control must be maintained to ensure that personnel can safely enter and work in the facility and that safety-significant systems, components, and structures (including engineered safety features) will function as intended. The general level of engineering verification and validation associated with engineering activities will be significantly reduced as the Project comes to closure. Peer reviews and one-over-one management reviews will be the norm.

7) Procurement

Procurement System Manual

Acquisition Procedure for Requisitioning
Commodities and Services (1-W36-APR-111)

COEM (Engineering Standards for
Procurement --COEM-DES-273)

RMRS QA review of RMRS Documents
(RMRS -QA-05.02)

RMRS Evaluation of Suppliers
(RMRS-QA-07.01)

Comments: The procurement of items and services for the Building 776/777 Closure Project will be planned and controlled to ensure that the quality of items and services is known, documented and meets the technical requirements and acceptance criteria of the Project. Towards the end of the Building 776/777 Closure Project, most procurements should be commercial buys that will not require suppliers to have special quality programs, meet acceptance criteria, or to provide documentation beyond that which comes with the item as a matter of course.

8) Inspection and Acceptance Testing

Inspection and Acceptance Test Process
(1-PRO-072-001)
COEM (Design Process Requirements –
COEM-DES-210)
Control of Measuring and Test Equipment
(1-197-ADM-12.01)
Computer Software Management Manual
(1-MAN-004-CSMM)
Waste Inspection Procedures Manual
RMRS QAP Manual
RMRS QAP Description (App. 3)

Comments: Instruments used to demonstrate compliance with the facility's AB, (e.g., LCO surveillances), instruments necessary to operate safety systems, and instruments necessary to demonstrate acceptance criteria for closure activities will be calibrated in conformance with established schedules and acceptance criteria. The level of acceptance testing will be reduced as the level of engineering verification and validation associated with engineering activities diminishes. Waste inspection activities will be based on the requirements in the disposal facility WACs. Additional references are included in this section for the use of computer hardware and software and assessment of data usability as prescribed in ANSI/ASQC-E4.

9) Management Assessment

Site Integrated Oversight Manual
(1-MAN-013-SIOM)
RMRS Management Assessments
(RMRS-QA-09.01)
RMRS Corrective Action (RMRS-QA-03.01)

Comments: As the Building 776/777 Closure Project progresses, most of the assessments in the facility will be management assessments (versus independent assessments) and the level of assessment activity will be reduced. Management assessments will be performed to establish whether the prevailing management structure, policies, practices, procedures and data are adequate for ensuring that the quality of the results based on the necessary risk and performance indicators are obtained. Management assessment programs have been established for the following areas: management systems, QA, configuration management, training and qualification, EP, COOP, maintenance, RP, fire protection, waste management/environmental protection, nuclear safety, criticality safety, hazardous material protection, industrial safety, work control, procedures and occurrence reporting. The last large-scale assessment activity should be a Pre-Demolition Survey review, and final Project closeout documentation to confirm that the required closure steps have been completed.

10) Independent Assessment

Site Integrated Oversight Manual
(1-MAN-013-SIOM)

Independent Assessment Program
Planning and Scheduling Independent
Assessments

Readiness Determination Manual
(1-MAN-040-RDM)

Conduct of Independent Assessment Activities

RMRS Qualification and Certification of QA
Personnel

RMRS Conduct of Surveillances
(RMRS-QA-10.02)

RMRS Corrective Action (RMRS-QA-.3.01)

Comments: As the Building 776/777 Closure Project approaches completion, the level and intensity of independent assessments will diminish. Assessments will include evaluations to determine and verify whether technical requirements, not just procedural compliance are being implemented. At some point near closure no further independent assessments will be scheduled or performed; limited- scope facility-specific surveillances performed by QA representatives assigned to the facility will continue until shortly before final closure.

This page intentionally left blank

10.0 IMPLEMENTATION SCHEDULE

PBS #19 contains a P3 schedule and BOE for completion of the Building 776/777 Closure Project. The current schedule is provided in Appendix D. The first SETs removed will be the building systems tied into Zone I ventilation (i.e., process tanks, GBs, and B-boxes). The Zone I ventilation is scheduled to be removed in FY04. Remaining room decommissioning activities will take place in FY04. The remaining building utilities, ventilation, and fire systems will be removed during FY05. The building shell will be removed in FY06.

As provided in the DPP, this schedule information is being supplied to add clarity to the DOP and to identify the general planned schedule if full funding is available. The schedule is not an enforceable part of the DOP and DOE or its subcontractors may alter the schedule without penalty and without prior notification or approval of the LRA (Ref. 62). Schedule changes will be shared with the LRA in accordance with Section 1.1.1(1) of the DPP, entitled "Timely Sharing of Information," (Ref. 10).

This page intentionally left blank

11.0 PROJECT ORGANIZATION

This section describes the Building 776/777 Closure Project organization structure, functions, and interfaces. As provided in the DPP, this information is being supplied to add clarity to the DOP and to identify reporting relationships and responsibilities. The organizational structure is not an enforceable part of the DOP and DOE or its contractors may alter the structure without penalty and without prior notification or approval of the LRA (Ref. 62). Organization changes will be shared with the LRA in accordance with Section 1.1.1(1) of the DPP, entitled "Timely Sharing of Information," (Ref. 10).

11.1 Roles and Responsibilities

The general responsibilities of both internal and external organizations are described below.

11.1.1 Internal Organizations

The management approach of the Building 776/777 Closure Project provides for easily maintained schedule and cost controls. These controls assist the project manager to ensure that the targeted costs and schedule are met. The real-time controls identify changes as requirements dictate, not when the end of the milestone/project is reached and costs have already exceeded the target. This approach provides a format to meet DOE's philosophy, which puts worker safety first, constructs outcome-oriented projects, provides better management and control of finances, and focuses technology. The general responsibilities for the internal organizations are as follows:

<u>Organization</u>	<u>Responsibilities</u>
DOE	<ul style="list-style-type: none">• Enforcement of government regulations;• Enforcement of H&S provisions;• Communications with Site external organizations regarding the closure program;• Oversight of closure operations;• Communications with contractor concerning external and RFFO inputs, including funding and overall direction; and• Interface with other regulatory agencies, stakeholders, and the public.
Contractor	<ul style="list-style-type: none">• Communications with DOE-RFFO and the public regarding closure project status;• Integrated management of the closure project including program and subcontractor funding and guidance;• Approval and transmittal of appropriate documents to DOE-RFFO; and• Performance oversight.
Subcontractors	<ul style="list-style-type: none">• Communications with contractor and employees regarding the performance and status of the closure project;

- Subcontractors (cont'd)
- Demonstrating that alternate methods of performing closure activities comply with regulatory requirements;
 - Performing closure activities; and
 - Submittal of the closure documentation.

11.1.2 External Organizations

Three independent entities oversee and regulate environmental, health, and safety aspects of DOE activities at RFETS: CDPHE, EPA, and the Defense Nuclear Facilities Safety Board (DNFSB). These entities have executed a Memorandum of Understanding (MOU) with DOE to define their respective roles and responsibilities for oversight of activities conducted in the industrial area (Ref. 63). Individual roles and responsibilities are summarized below.

Organization

Roles and Responsibilities

- | | |
|-------|---|
| CDPHE | <ul style="list-style-type: none">• LRA for regulation, oversight, and enforcement of RCRA/CHWA requirements for hazardous and mixed wastes.• LRA for regulation or oversight of decontamination and decommissioning of fixed structures and equipment, including dismantlement, demolition, and closure of RCRA-regulated units.• LRA for oversight of LLW and regulation of LLM waste disposal on Site or elsewhere in Colorado.• LRA for regulation of RCRA corrective actions and lead oversight of CERCLA response actions. |
| EPA | <ul style="list-style-type: none">• LRA for final selection of remedial alternatives under CERCLA. |
| DNFSB | <ul style="list-style-type: none">• LRA for storage of source, SNM, and byproduct material and radioactive wastes not subject to NRC licensing or CDPHE/EPA regulation. |

In that portion of the Site where each is the LRA, CDPHE and EPA have authority to direct DOE to either stop work or perform particular tasks required under RFCA when conditions present an immediate risk to public health or the environment.

11.1.3 Working Relationships

Internal and external organizations will use the consultative process described in ¶¶ 51 through 61 of RFCA (Ref. 1), and the principles articulated in Appendix 2 of RFCA and Section 1.1.1 of the DPP (Ref. 10) to establish and maintain effective working relationships with each other and with the general public. Per ¶70 of RFCA, CDPHE regulated decommissioning activities under CERCLA. To expedite the decommissioning process, the parties have agreed that CDPHE may exercise authority by participating in the IWCP process. For the purposes of this DOP, "participation in the

IWCP process" means the LRA has an opportunity to discuss issues and ask questions, but it does not mean the LRA has approval authority for IWCP work packages. DOE and the contractor will advise CDPHE of IWCP meetings and roundtable review sessions, and will provide relevant information in a timely manner. CDPHE, DOE, and the contractor may use the roundtable review sessions as a forum for RFCA consultation. If this process does not address CDPHE's concerns and CDPHE believes the planned activities meet the criteria for issuing a "stop work" order under RFCA, CDPHE may issue such an order.

11.2 Team Organization Structure

Program management and control will function under an integrated scope, schedule, and cost control system that identifies responsibilities and interfaces. The project organization, under the direction of a project manager, is an integrated team of qualified individuals for each project. This team will consist of personnel from a number of subcontractors.

Figure 11 and Figure 12 depict the organizational structure of the project.

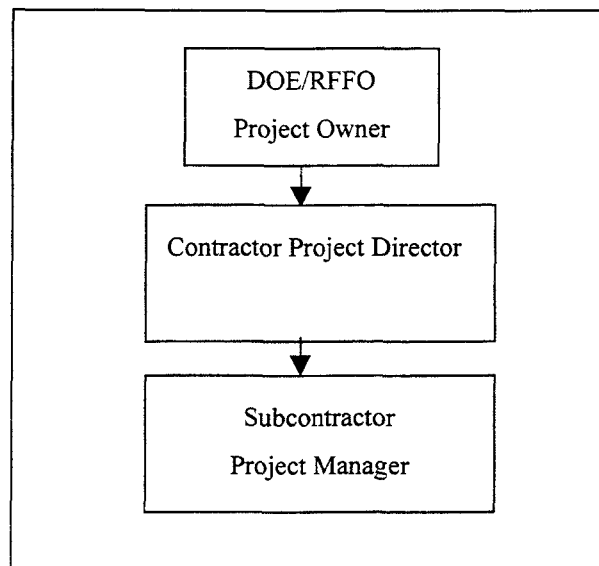


Figure 11. Building 776/777 Closure Project Organizational Chain

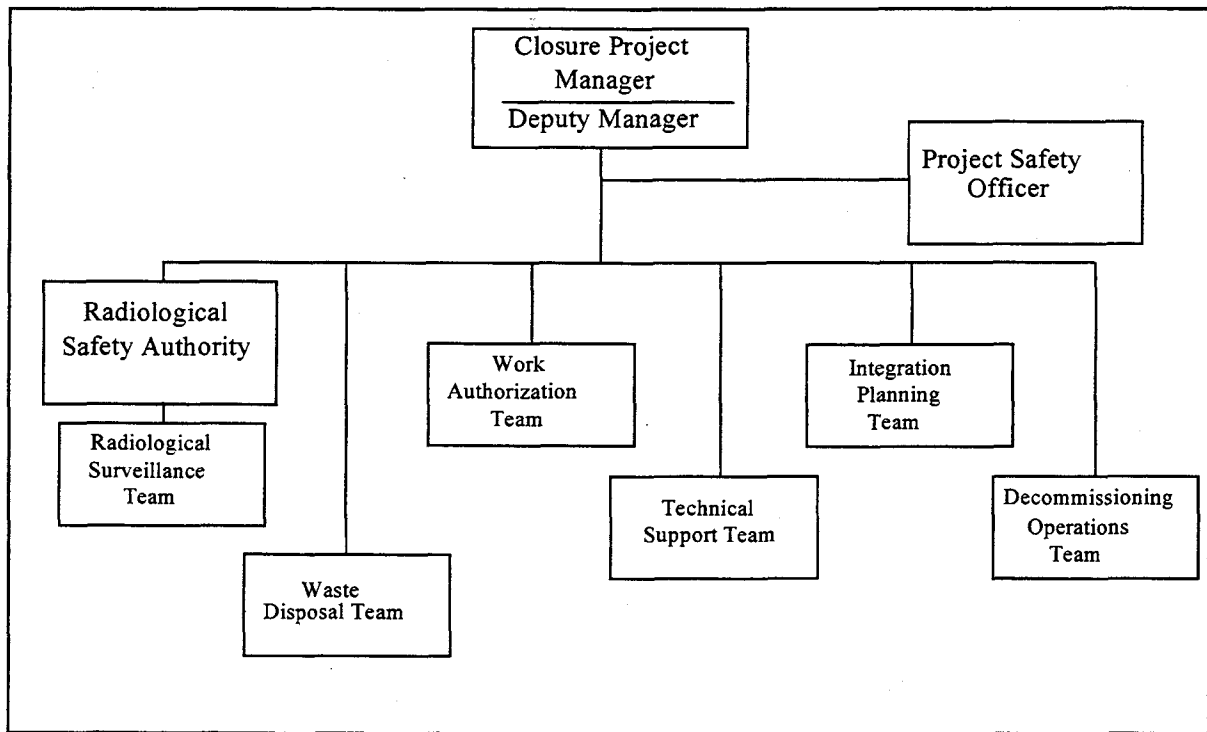


Figure 12. Building 776/777 Closure Project Organization Structure and Functions

The detailed roles and responsibilities of the positions are included at the end of this section. In brief, there is a clear line of responsibility from the Integrator to the Closure Project Manager, through the Work Release Manager, to the Execution Project Managers, and finally to the Enhanced Worker Teams.

- The Project Director is the primary Integrator among all programs and clusters for the Building 776/777 Closure Project. The Director ensures funding is available to accomplish desired tasks and validates schedules.
- The Subcontractor Closure Project Manager is the senior leader of the closure project and has the responsibility to set expectations for performance, establish principles of behavior, and provide the primary senior external interface for the closure project.
- The WA Team Leader is the focal point who maintains the safety and regulatory envelope for the project. This person provides the primary external interface to the site-level safety and regulatory direction and is the link to the COOP improvement. It provides the project constraints to the Project Execution Managers and then gives the day to day authorization to proceed with work similar to the function currently provided by a shift manager.
- The Integration Planning Team Leader is the primary interface to external organizations that are working on the Protected Area Execution Plan and the Ten-Year Plan. Within the closure project, this person has the responsibility to maintain the Project Closure Plan and to coordinate the distributed planning resources. The plan includes the entire closure project, the Three-Year Plan, as well as the annual, monthly, and weekly plans. The resource

requirements must be projected to allow adequate time for the Technical Support Manager to acquire the resources for distribution to the Project Team Leaders.

- The Project Team Leaders are responsible for executing the defined project work scope. The work scope definition comes from the Project Integration Manager. For example, a Project Team Leader would be assigned to GB removal or to excess equipment removal.
- The Technical Support Manager is responsible for filling a number of resource needs of the Project Team Leaders as predicted by the Integration Planning Team Leader. These resources include all technical aspects including nuclear safety, criticality safety, environmental safety, engineering, etc. This person is the focal point for setting resource priorities. The Closure Project Manager sets the absolute priorities.
- The Decommissioning Operations teams have the self-contained resources to complete the assigned project activity. Some resources will be temporarily assigned to the activity; however, it is the responsibility of the Technical Support Manager to assure that the necessary external resources are provided at precisely the right time. There will be several modes of self-direction depending upon the team experience. This includes self-identification of hazards. Specific resources required are detailed as part of the resource-loaded schedule.

11.3 Team Processes

The process used by the project team follow the CH2MHILL Project Delivery System methodology. These processes include:

- Develop the work plan.
- Obtain project endorsement.
- Authorize work performance.
- Implement work.
- Measure and report work performance.
- Control work to the plan.
- Change the plan if necessary.
- Document work performance and results.
- Communicate.
- Close the project.

11.4 Responsibilities

The contractor assigns responsibility to a person for each element of the WBS. The responsibility depends on the level of the WBS. Managers at the lowest level of the WBS have the responsibility to plan and perform the work in the work package, and to report progress. They may authorize changes in the details of the work package that do not affect the CPB or performance measures.

Changes that meet the Baseline Change Process thresholds must follow the Baseline Change Process as described in Planning and Integration (P&I) Work Instruction INST-002.

11.5 Team Interfaces

Interfaces with other projects include:

- Project No. 02 "Waste Management Project" that affects Building 776/777 consists of WPD #62 "Sanitary Waste Management" and includes management of LLW/LLM waste. WPD #4 "TRU/TRM Storage" includes Venting and Aspirating and management of TRU/TRM waste. WPD #7 "Waste Treatment Project" provides the necessary waste treatment capabilities. Venting and Aspirating drums may be required on an as needed basis. The size reduction airlock may be utilized for characterization and repackaging. Headspace (WIPP) gas sampling, evacuation of TRU and LLW drums, and some glove washing will occur.
- Project No. 06 "SNM Consolidation Project" that affects Building 776/777 consists of WPD #10 "Pu Storage Project" and includes the scope of consolidating Pu.
- Project No. 08 "Pu Metals and Oxides Stabilization Project" that affects Building 776/777 consists of WPD #21 "SNM Processing" and includes the scope of ensuring compliance with HSP Manual (Ref. 30).
- Project No. 09 "Pu Liquid Stabilization Project" that affects Building 776/777 consists of WPD #15 "Residue Sampling" and includes characterization and storage of residues.
- Project No. 11 "Uranium Disposition Project" that affects Building 776/777 consists of WPD #17 "Uranium Decontamination" which includes decontaminating parts stored in Building 776/777.
- Project No. 12 "SNM Shipping Project" that affects Building 776/777 consists of WPD #22 "SNM Shipping Project" which includes the scope related to shipping material off site.
- Project No. 23 "Utilities and Infrastructure Project" that affects Building 776/777 consists of WPD #39 "Utilities Projects" which provides utility services. This effort will continue through deactivation and decommissioning. WPD #40 "Infrastructure Project" provides site-wide infrastructure.
- Project No. 24 "Safeguards and Security Project" that affects Building 776/777 consists of WPD #60 "Safeguards and Security Project" which provides safeguards and security support.
- Project No. 27 "Analytical Services Project" that affects Building 776/777 consists of WPD #41 "Analytical Services Project" which provides analytical laboratory support.

Interfaces with other Site organizations include:

- Site Operations and Integration
- Planning and Integration (P&I)
- Safety Systems and Engineering

- Environmental Systems and Stewardship
- Closure Projects

Interfaces outside of the Rocky Flats organizations include:

- CDPHE
- EPA
- Citizens Advisory Board (CAB)
- Defense Nuclear Facilities Safety Board (DNFSB)
- Rocky Flats Coalition of Local Governments (RFCOLG)

Interfaces with DOE include:

- RFFO

This page intentionally left blank

12.0 COMMENT RESPONSE SUMMARY

The responsiveness summary addressing public comments on the final draft version of this DOP (dated 7/7/99) is attached as Appendix F.

This page intentionally left blank

13.0 REFERENCE INFORMATION

13.1 Acronyms and Abbreviations

Following is a list of acronyms and abbreviations used in this DOP.

AB	Authorization Basis
ACM	asbestos containing material
AHA	Activity Hazards Analysis
ALARA	As Low As Reasonably Achievable
APEN	Air Pollutant Emission Notice
ARARs	Applicable or Relevant and Appropriate Requirements
AR	Administrative Record
ASF	Activity Screening Form
ASRF	Advanced Size Reduction Facility
ATRSC	Allowable Total Residual Surface Contamination
Be	beryllium
BIO	Basis for Interim Operations
BOE	Basis of Estimate
BEST	Basis of Estimate Software Tool
CBDPP	Chronic Beryllium Disease Prevention Program
CCR	Code of Colorado Regulations
CDPHE	Colorado Department of Public Health and Environment
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act (Superfund)
CFR	Code of Federal Regulations
CHWA	Colorado Hazardous Waste Act
CHWR	Colorado Hazardous Waste Regulations
CID	Cumulative Impact Document
COEM	Conduct of Engineering Manual
CO₂	carbon dioxide
D&D	decontamination & decommissioning
COOP	Conduct of Operations
CPB	Closure Project Baseline
cpm	counts per minute

DDCP	Decontamination & Decommissioning Characterization Protocol
DNFSB	Defense Nuclear Facilities Safety Board
DOE	U.S. Department of Energy
DOP	Decommissioning Operations Plan
DOT	U.S. Department of Transportation
dpm	disintegrations per minute
DPP	Decommissioning Program Plan
EP	Emergency Preparedness
EPA	Environmental Protection Agency
ER	environmental restoration
FBI	Fluidized Bed Incinerator
FDPM	Facilities Disposition Program Manual
FSAR	Facility Safety Analysis Report
FY	fiscal year
GB	glovebox
HASP	Health & Safety Plan
H&S	health & safety
HEPA	high efficiency particulate air (filter)
HSP	Health & Safety Practices (Manual)
HVAC	heating ventilation and air conditioning
ICMS	Integrated Chemical Management System
IDC	Item Description Code
IH&S	Industrial Hygiene & Safety
IHSS	Individual Hazardous Substance Site
ISM	Integrated Safety Management
ISMS	Integrated Safety Management System
IWCP	Integrated Work Control Program
JHA	Job Hazard Analysis
LCO	Limiting Condition of Operations
LDRs	Land Disposal Restrictions
LBP	lead based paint
LL	low-level (waste)
LLM	low-level mixed (waste)
LLMW	low-level mixed waste
LLW	low-level waste

LO/TO	lockout/tagout
LRA	Lead Regulatory Agency
mrad	millirad
mrem	millirem
NAAQS	National Ambient Air Quality Standards
nCi	nanocurie
NEPA	National Environmental Policy Act
NESHAP	National Emission Standards for Hazardous Air Pollutants
NIOSH	National Institute of Occupational Safety and Health
NPDES	National Pollutant Discharge Elimination System
NTS	Nevada Test Site
OSHA	Occupational Safety & Health Act
OU	operable unit
P&I	planning and integration
PBD	Project Baseline Description
PBS	Project Baseline Summary
PCBs	polychlorinated biphenyls
PEP	Project Execution Plan
PHA	Preliminary Hazard Analysis
POD	Plan of the Day
POW	Plan of the Week
PPE	personal protective equipment
ppm	parts per million
Pu	plutonium
QA	quality assurance
QAP	Quality Assurance Program
RCRA	Resource Conservation and Recovery Act
rem	radiation equivalent man
RFCA	Rocky Flats Cleanup Agreement
RFETS	Rocky Flats Environmental Technology Site
RFFO	Rocky Flats Field Office
RLC	Reconnaissance Level Characterization
RLCR	Reconnaissance Level Characterization Report
RSPs	Radiological Safety Procedures
RWP	Radiological Work Permit

S&H	safety & health
S&M	surveillance & maintenance
SHPO	State Historic Preservation Officer
Site	Rocky Flats Environmental Technology Site
SME	subject matter expert
SNM	Special Nuclear Material
Sr-90	Strontium-90
STP	Site Treatment Plan
SWB	standard waste box
TBC	to be considered
TCLP	Toxicity Characteristic Leaching Procedure
TRM	transuranic mixed (waste)
TRU	transuranic (waste)
TSCA	Toxic Substances Control Act
TSD	treatment, storage, and disposal
TU	Temporary Unit
UCNI	Unclassified Controlled Nuclear Information
USQ	Unreviewed Safety Question
USQD	Unreviewed Safety Question Determination
VSS	Vital Safety Systems
WA	Work Authorization
WAC	Waste Acceptance Criteria
WAD	Work Authorization Document
WBS	Work Breakdown Structure
WCF	Work Control Form
WIPP	Waste Isolation Pilot Plant
WPD	Work Proposal Document

13.3 Definitions

Activity. An activity, in terms of the scope hierarchy defined here, is the lowest level of scope the Site maintains in the CPB (P3 schedule, budget/funding baseline). Activities are statused on a monthly basis for reporting of accomplishments against the approved work plan. Any change to the activity scope, schedule or cost (budget or funding) profile is subject to review and approval by the appropriate RFETS Change Control Board prior to proceeding with the proposed change.

Applicable or Relevant and Appropriate Requirements (ARARs). ARARs are promulgated standards, requirements, criteria or limitations that will be met during closure activities to ensure the

protection of human health and the environment and to ensure proper management of waste. A requirement under environmental laws may be either “applicable” or “relevant and appropriate.”

Applicable requirements are those cleanup standards, standards of control, and other substantive requirements, criteria, or limitations promulgated under federal or state environmental or facility siting laws that specifically address a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a CERCLA site. Only those standards that are identified by a state in a timely manner and that are more stringent than federal requirements may be applicable. (40 CFR 300.5)

Relevant and appropriate requirements are those cleanup standards, standards of control, and other substantive requirements, criteria, or limitations promulgated under federal environmental or state environmental or facility siting laws that, while not applicable to a hazardous substance, pollutant, contaminant, remedial action, location or other circumstance at a CERCLA site, their use is well suited to the particular site. Only those standards that are identified by a state in a timely manner and that are more stringent than federal requirements may be applicable. (40 CFR 300.5)

Asbestos. Asbestiform varieties of chrysolite, amosite (cummingtonite-grunerite), crocidolite, anthophyllite, tremolite, and actinolite.

Asbestos Containing Material. Material containing more than 1% asbestos.

CERCLA. The Comprehensive Environmental Response, Compensation, and Liability Act, 42 U.S.C. §9601 et. seq., as amended by the Superfund Amendments and Reauthorization Act of 1986, Pub. L. 99-499, and the Community Environmental Response Facilitation Act, Pub. L. No. 102-26; and the National Contingency Plan and other implementing regulations. (RFCA ¶25[m])

Closure. In the context of RCRA/CHWA hazardous waste management units, closure means actions taken by an owner or operator of a treatment, storage, or disposal unit to discontinue operation of the unit in accordance with the performance standards specified in 6 CCR 1007, §264.11 or §265.111, as appropriate. (RFCA ¶25[p])

Co-located Worker. A worker located 100 meters from the Building 776/777 Cluster. This value was chosen due to RFETS compact dimensions.

Deactivation. The process of placing a building, a portion of a building, structure, system, or component (as used in the rest of this paragraph “building”) in a safe and stable condition to minimize the long-term cost of a surveillance and maintenance program in a manner that is protective of workers, the public, and the environment. Actions during deactivation could include the removal of fuel, draining and/or de-energizing of non-essential systems, removal of stored radioactive and hazardous materials, and related actions. As the bridge between operations and decommissioning, based upon Decommissioning Operations Plans or the Decommissioning Program Plan, deactivation can accomplish operations-like activities such as final process runs, and also decontamination activities aimed at placing the facility in a safe and stable condition. Deactivation does not include decontamination necessary for the dismantlement and demolition phase of decommissioning (i.e., removal of contamination remaining in fixed structures and equipment after deactivation). Deactivation does not include removal of contaminated systems, system components, or equipment except for the purpose of accountability of SNM and nuclear safety. It also does not

include removal of contamination except as incidental to other deactivation or for the purposes of accountability of SNM and nuclear safety. (RFCA ¶25 [y])

Decommissioning. Decommissioning means, for those buildings, portion of buildings, structures, systems, or components (as used in the rest of this paragraph, "building") in which deactivation occurs, all activities that occur after the deactivation. It includes surveillance, maintenance, decontamination and/or dismantlement for the purpose of retiring the building from service with adequate regard for the health and safety of workers and the public and protection of the environment. For those buildings in which no deactivation occurs, the term includes characterization, surveillance, maintenance, decontamination and/or dismantlement for the purpose of retiring the building from service with adequate regard for the health and safety of workers and the public and protection of the environment. The ultimate goal of decommissioning is unrestricted use or, if unrestricted use is not feasible, restricted use of the buildings. (RFCA ¶25[z])

Decontamination. The removal or reduction of radioactive or hazardous contamination from facilities, equipment, or soils by washing, heating, chemical or electrochemical action, mechanical cleaning or other techniques to achieve a stated objective or end condition. (RFCA ¶25[aa])

Dismantlement. The demolition and removal of any building or structure or a part thereof during decommissioning. (RFCA ¶25[ab])

End-Point Criteria. The defined objective(s) or goal(s) that represent the agreed upon facility condition to be achieved during the closure process.

Enhanced Work Planning. A process that evaluates and improves the program by which work is identified, planned, approved, scheduled, coordinated, controlled, and executed.

Facilities. Buildings and other structures, their functional systems and equipment, and other fixed systems and equipment installed therein; outside plant, including site development features such as landscaping, roads, walks, and parking areas; outside lighting and communication systems; central utility plants; utilities supply and distribution systems; and other physical plant features.

Facility Disposition Process. The sequence of activities required to take a facility from its existing condition to final disposition. The goal of disposition is for the Site to accomplish all of the activities necessary either to demolish the building and dispose of the resulting waste or to release the building for reuse.

As discussed in RFCA Attachment 9, unless building specific conditions otherwise warrant, the following activities are typical, but not all inclusive, of those that will be performed for a building: (a) containerized waste and materials removed; (b) Liquid waste and processing systems drained; (c) RCRA units closed or have a closure plan integrated with building disposition plan; (d) all TRUM, defined as materials in excess of 100 nCi per gram, removed; (e) equipment, piping, ducts, GBs, and major electrical components removed (e.g., strip out), (f) radioactive hot spots and hazardous substances removed; and (g) easily removed contamination removed. (DPP, Section 2.1)

Graded Approach. A process that assures safety analysis and documentation preparation is commensurate with the magnitude of the hazards being addressed and the complexity of the facility and/or systems being relied on to maintain an acceptable level of risk.

Hazard. A source of danger (i.e., material, energy source, or operation) with the potential to cause illness, injury, or death to personnel, or damage to a facility or the environment without regard for the likelihood or credibility of accident scenarios or consequence mitigation.

Hazardous Waste. Hazardous waste is any solid waste that either exhibits a hazardous characteristic (i.e., ignitability, corrosivity, reactivity, or toxicity) or is named on one of three lists published by the EPA in 40 CFR 261, Identification and Listing of Hazardous Waste. To be considered hazardous, a waste must first meet EPA's definition of "solid waste," which includes liquids.

Individual Hazardous Substance Site (IHSS). Specific locations where solid waste, hazardous substances, pollutants, contaminants, hazardous waste, or hazardous constituents may have been disposed or released to the environment within the Site at any time, irrespective of whether the location was intended for the management of these materials.

Interim Measure. The RCRA/CHWA term for a short term action to respond to imminent threats, or other actions to abate or mitigate actual or potential releases of hazardous wastes or constituents.

Interim Remedial Action. The CERCLA term for an expedited response action performed in accordance with remedial action authorities to abate or mitigate an actual or potential threat to public health, welfare, or the environment from the release or threat of a hazardous substance from RFETS.

Involved Worker. Personnel performing work inside the Building 776/777 Complex.

Job Hazard Analysis. An analysis of procedurally controlled activities that uses developed procedures as a guide to address and consider the hazards due to any exposures present during implementation of (job) procedures, the use and possible misuse of tools and other support equipment required by the procedures, and the behavioral motivations of the people performing them. A type of hazard analysis process which breaks down a job or task into component steps, examines each step to determine what hazard(s) exist or might occur, and establishes actions to eliminate or control the hazard.

Lead Based Paint (LBP) Debris. LBP debris where the LBP and debris remain bonded; incidental separation of paint from debris does not trigger classification as hazardous waste requiring disposal at a RCRA TSD facility.

Low-Level Waste (LLW). LLW is any radioactive waste that is not classified as transuranic waste, high-level waste, or spent nuclear fuel. No minimum level of radioactivity has been specified for LLW. LLW mixed with hazardous waste is referred to as low-level mixed (LLM) waste.

No Action with Safe Shutdown Maintenance. This alternative will maintain the 776/777 Cluster in shutdown mode. Building and equipment surveillance activities would be performed on a routine basis. No equipment or hazards would be removed from buildings in the cluster unless the routine surveys of buildings indicated a condition that would compromise the environment or public H&S. In this event, appropriate measures would be taken to mitigate the condition.

Off-Site Individual. A person located at the Site boundary (1999 meters).

Operable Unit (OU). A grouping of IHSSs into a single management unit. (RFCA ¶25[aw])

PCB Bulk Product Waste. Waste derived from manufactured products containing PCBs in a non-liquid state, at any concentration where the concentration at the time of designation for disposal was >50 ppm PCBs. PCB bulk product waste excludes PCBs or PCB Items; but includes: 1) non-liquid bulk waste or debris from the demolition of buildings and other man-made structures; 2) PCB-containing waste from the shredding of automobiles, household appliances, or industrial appliances 3) plastics; preformed or molded rubber parts and components, applied dried paints, varnishes, waxes, or other similar coatings or sealants; caulking; adhesives; paper, Galbestos; sound-deadening or other types of insulation; and felt or fabric products such as gaskets; 4) fluorescent light ballasts containing PCBs in the potting material.

PCB Items. Any PCB Article, Article Container, PCB Container, or PCB Equipment, that deliberately or unintentionally contains, or has as a part of it, any PCB or PCBs. This category includes electrical equipment such as transformers, capacitors and switches.

PCB Remediation Waste. Waste containing PCBs as a result of a spill, release, or other unauthorized disposal, at the following concentrations: (1) materials disposed of prior to April 18, 1978, that are currently at concentrations ≥ 50 ppm PCBs, regardless of the concentration of the original spill; (2) materials which are currently at any volume or concentration where the original source was ≥ 500 ppm PCB beginning on April 18, 1978, or ≥ 50 ppm beginning on July 2, 1979; and (3) materials which are currently at any concentration if the PCBs are from a source not authorized for use under 40 CFR Part 761.

PCB remediation waste means soil, rags, and other debris generated as a result of any PCB spill cleanup, including, but not limited to the following: (1) environmental media containing PCBs, such as soil and gravel; dredged materials, such as sediments; settled sediment fines, and aqueous decantate from sediment; (2) sewage sludge containing <50 ppm PCBs and not in use according to §760.20(a) [relating to uses of sewage sludge regulated under Parts 257, 258, and 503 of 40 CFR]; (3) PCB sewage sludge, commercial or industrial sludge contaminated as a result of a spill of PCBs including sludge located in or removed from any pollution control device, and aqueous decantate from an industrial sludge; and (4) buildings and other man-made structures, such as concrete or wood floors or walls contaminated from a leaking PCB or PCB-contaminated transformer, porous surfaces and non-porous surfaces.

Physically Empty. The condition of a tank or ancillary equipment in which no liquid remains after verification by personnel who are familiar with the tank system or a by proven technology. For example, verification may be performed by draining at low points or by non-destructive testing.

Process Waste. Process waste is solid, hazardous, and mixed waste generated as a result of normal building operations and deactivation activities.

Project Baseline Summary (PBS). The PBS is a formal document that defines a project at RFETS from a DOE reporting structure standpoint. The PBS structure maintained by DOE is very similar to the PBD summary maintained by the operating contractor (see below). The primary difference is how DOE rolls the PBD up to the PBS level for reporting to DOE Headquarters.

Project Baseline Description (PBD). The PBD is a summary of the Work Planning Documents (WPDs) or Work Authorization Documents (WADs), as appropriate, that provides a broad overview of the project scope, assumptions, and other project specific summary items that collectively define

the project. Items included in the PBD are the Project Purpose, Project Scope, WADs included in the PBD and a description of each, assumptions and conditions related to the project, the project execution strategy, specific safety plan for each WAD included in the PBD, Regulatory drivers, the project schedule (where to find the currently approved project schedule), and the project cost plan (summarized by WAD).

Radiological Contamination. Radioactive material present in a location where it should not be present.

Radiological Sources. Radioactive material packaged for use exclusively for its emitted radiation.

RCRA Stable. A step toward RCRA closure, whereby wastes are removed from a RCRA-regulated unit and the possibility of future waste input is eliminated. For tank systems this means a tank and its ancillary equipment have been drained to the maximum extent possible using readily available means, with the objective of achieving less than one percent holdup, and with no significant sludge and no significant risk remaining. Physical means must then be used to ensure no waste is re-introduced to the system (e.g. lock out/tag out, blank flanges). (RCRA Part B Permit and Interim Status Closure Plan, Part X.E)

Remediation Waste. Remediation waste includes all solid, hazardous, and mixed waste; all media and debris containing hazardous substances or listed hazardous or mixed wastes, or exhibiting a hazardous characteristic; and hazardous substances generated from activities regulated under RFCA as RCRA corrective actions or CERCLA response actions, including decommissioning under an approved decision document. Remediation waste does not include waste generated from other activities (e.g., normal building operations and deactivation activities). (RFCA ¶25[bf])

Resource Conservation and Recovery Act (RCRA). The Resource Conservation and Recovery Act, 42 U.S.C. §6901 et. seq., as amended by the Hazardous and Solid Waste Amendments of 1984, the Federal Facility Compliance Act of 1992, and implementing regulations. (RFCA ¶25[ay])

Residues (RES). Pu-contaminated liquids and solids that were once held in reserve at Rocky Flats because they contain Pu in sufficient quantities to warrant treatment for recovery of nuclear material. Residues mixed with hazardous waste are referred to as mixed residues (REM).

RFCA Standard Operating Protocol (RSOP). Approved protocols applicable to a set of routine environmental remediation and/or decommissioning activities regulated under RFCA that RFFO may repeat without re-obtaining approval after the initial approval because of the substantially similar nature of the work to be completed. Initial approval of an RSOP will be accomplished through an interim measure/interim remedial action process.

Safety Analysis Report (SAR). A report that documents the adequacy of safety analyses for a nuclear/non-nuclear facility to ensure that the facility can be constructed, operated, maintained, shut down and decommissioned safely and is in compliance with applicable laws and regulations.

Safety and Health (S&H). As defined in this DOP, a conditional state in which both the public and workers are free from harm. It is also defined as the practice and application of techniques to help prevent illness, injury, death, and property loss as a result of unintentional and undesirable conditions and acts.

Safety Authorization Basis. The combination of information relating to the control of hazards at a facility (including design, engineering analyses, and administrative controls) upon which DOE depends for its conclusion that activities at the facility can be conducted safely.

Safety-Critical Items. Equipment, systems, or components that are necessary to prevent or mitigate the harmful consequences of hazardous materials release.

Sanitary Waste.

Routine Sanitary Waste. This type of sanitary waste is collected in dumpsters located throughout RFETS. Typically these wastes consist of soft or compactable items generated by office/administrative and cafeteria areas and do not required a Radiological Waste Release Evaluation prior to generation or disposal into dumpsters. Typical routine sanitary waste includes: packaging and general office refuse; food waste from cafeteria or offices; non-recyclable paper, cardboard and miscellaneous glass; metal rubber; and plastic items from routine office/administrative operations.

Special Sanitary Waste. Special sanitary waste is sanitary waste that requires specific treatment, analysis, certification, and/or packaging prior to disposal off site. Special sanitary waste includes asbestos and Be waste that is not hazardous waste.

SETs. For decommissioning purposes, SETs are small, manageable groupings of similar equipment and rooms that may be worked independently.

Special Nuclear Material (SNM). Means Pu or uranium enriched in the isotope 233 or in the isotope 235, and any other material determined to be SNM pursuant to the Atomic Energy Act. (42 U.S.C. 2014[aa]).

Standards. As defined by the Department's Standards Committee, "Standards" include "Federal, state, and local laws and regulations; Department Orders; nationally and internationally recognized standards; and other documents (such as industrial standards) that protect the environment and the safety and health of our workers and the public."

Surveillance and Maintenance (S&M). A program established during deactivation and continuing until phased out during closure to provide containment of contamination, physical safety and security controls and maintenance of the facility in a cost-effective manner that is protective of workers, the public and the environment.

Transuranic (TRU) Waste. TRU waste is any waste that is contaminated with alpha-emitting transuranium radionuclides with half-lives greater than 20 years, in concentrations greater than or equal to 100 nCi/gram at the time of assay. TRU waste mixed with hazardous waste is referred to as TRU mixed waste (TRM).

Unreviewed Safety Question (USQ). A process to allow contractors to make physical and procedural changes and to conduct tests and experiments without prior DOE approval as long as the changes do not explicitly or implicitly affect the safety AB of the facility. It also requires that issues with a potential impact to the safety AB be brought to the attention of DOE.

USQ Screening Process. A technique/tool that uses a checklist approach to help determine if suggested changes require a full USQ determination of any effect on the safety AB of the facility.

Work Proposal Document (WPD). The WPD is a subset of the PBS, it defines the scope of work to be performed each fiscal year for each WBS element, the budget required to perform the scope, milestones planned for each WBS element and their end dates. Once approved, the WPD becomes the WAD. This authorization occurs on an annual basis once Congress has appropriated budget to DOE. Several WPDs can roll up to the PBS level but in the case of the Building 776/777 Closure Project, only one WPD (WPD 35) rolls into the summary document (PBS 19). Specific items included in the WPD/WAD are: the fiscal year statement of work (for the current fiscal year plus one year) at the WBS level; DOE- RFFO controlled and other external milestones; fiscal year specific assumptions and conditions; impact of directed funding reduction on work scope and a detailed cost plan (budget profile) by fiscal year for each WBS element (current FY plus 1 FY); and a record of approved changes to the WAD. Several appendices accompany the WAD and provides further detail to the schedule and milestones.

WADlet. The WADlet is the next level of detail under the WAD. A WADlet is a grouping of scope with associated budget and schedule requirements to meet the scope. The WADlet is identified as a WBS element that is required to control and report specific scope conducted to meet the final objective of the WAD . Normally, several scope-similar, summary activities that leads to a significant completion milestone roll up to the WADlet level. An example for Building 776/777 is WADlet 1.1.06.12.02-SNM Removal Operations, which consists of activities such as: performing gamma scans; identifying SNM holdup contamination; verifying GB operability; entering the GB and removing the holdup; and transporting the holdup for thermal stabilization. The two primary completion milestone for this WADlet is removal of all SNM holdup from Building 776/777 and closure of the Material Access Area.

Work Task. A discrete activity made up of procedures performed in steps to achieve an objective goal such as removal of Pu from GBs, removal of a chemical from a storage area or removal of asbestos from a facility area.

13.3 References

- 1 FINAL Rocky Flats Cleanup Agreement, Federal Facility Agreement and Consent Order, CERCLA VIII-96-21, RCRA (3008[h]) VIII-96-01, State of Colorado Docket #96-07-19-01 (July 19, 1996).
- 2 RFCA, Appendix 9, Rocky Flats Vision.
- 3 Decontamination and Decommissioning Characterization Protocol (MAN-077-DDCP), latest revision.
- 4 Building 776/777 Reconnaissance Level Characterization Report, Rev. 0, August 28, 1989.
- 5 Resource Conservation and Recovery Act (RCRA), as amended by the Hazardous and Solid Waste Amendments Act (HSWA) and the Federal Facility Compliance Act (FFCA), 42 USC 6901 *et seq.*
- 6 Colorado Hazardous Waste Act, CRS 25-15-101.
- 7 Colorado Hazardous Waste Regulations, 6 CCR 1007-3.
- 8 Rocky Flats Environmental Technology Site RCRA Part B Permit, CO-097-05-30-01, effective 06/30/97.
- 9 Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 USC 9620.
- 10 Rocky Flats Environmental Technology Site Decommissioning Program Plan (DPP), latest revision.
- 11 Rocky Flats Environmental Technology Site Radiological Control Manual, latest revision.
- 12 Integrated Work Control Program (IWCP) Manual (MAN-0710-IWCP).
- 13 Toxic Substances Control Act (TSCA), 15 USC 2601 *et seq.*
- 14 Management of Polychlorinated Biphenyls (PCBs) in Paint and Other Bulk Product Waste During Facility Disposition, RFETS Environmental Leadership Team Environmental/Waste Compliance Guidance No. 25.
- 15 Chronic Beryllium Disease Prevention Program (MAN-072-OS&H).
- 16 10 CFR 835, Occupational Radiation Protection.
- 17 DOE Order 5400.5, Radiation Protection of the Public and the Environment.
- 18 The Decontamination & Decommissioning Characterization Protocol (DDCP) is currently undergoing a major revision, in consultation with EPA and CDPHE, per Section 2.3 of the Decommissioning Program Plan (DPP). When complete, the associated Pre-Demolition Survey Plan will be submitted to the LRA for review and approval, per Section 4.6 of this DOP.
- 19 6 CCR 1007-3, Part 261, Identification and Listing of Hazardous Waste.
- 20 6 CCR 1007-3, CFR Part 268, Land Disposal Restrictions.
- 21 Value Engineering Study, RFETS Building 776/777 Glovebox Size Reduction, FINAL REPORT, August 1998, prepared by Solutions Engineering & Facilitating, Inc.
- 22 Property Management Manual (1-MAN-009-PMM), latest revision.
- 23 Brown, C.M., "Evaluation of Potential Cost Impacts from Volume Reduction and Decontamination for TRU Contaminated Systems and Equipment," Kaiser-Hill Company, L.L.C. internal document, September 1998.
- 24 Building 776/777 Complex Basis for Interim Operation (BIO), Rev. 0, March 30, 1999 (draft), Safe Sites of Colorado, LLC.

-
- 25 DOE Order 5480.21, Unreviewed Safety Question.
 - 26 DOE Order 440.1, Worker Protection Management for DOE Federal and Contractor Employees.
 - 27 29 CFR 1910, Occupational Safety and Health Standards.
 - 28 29 CFR 1926, Safety and Health Regulations for Construction.
 - 29 Building 776/777 Closure Project-Specific Health and Safety Plan (HASP), latest revision.
 - 30 DOE Order 5480.9A, Construction Project Safety and Health Management.
 - 31 RFETS Health and Safety Practices (HSP) Manual (latest revision).
 - 32 Integrated Safety Management System Manual (1-MAN-016-ISM), latest revision.
 - 33 Conduct of Operations Manual (MAN-066-COOP), latest revision.
 - 34 Conduct of Engineering Manual (COEM), latest revision.
 - 35 Site Documents Control Manual (1-MAN-001-SDRM), latest revision.
 - 36 Training Users Manual (TUM), latest revision.
 - 37 Rocky Flats Administrative Procedures Manual Operations Review Requirements (1-52000-ADM-02.01), latest revision.
 - 38 Rocky Flats Environmental Technology Site Implementation Plan for the Nuclear Criticality Safety Manual, Rev. 2, December 2, 1996.
 - 39 Rocky Flats Transportation Safety Manuals (PADC-94-01279), December 1995.
 - 40 Rocky Flats Environmental Technology Site Emergency Plan (EPLAN-96).
 - 41 Building 776/777 Emergency Response Operations, Rev. 0 (3-V95-BERO-14.776/777), latest revision.
 - 42 Settlement Agreement and Compliance Order on Consent Concerning Mixed Residues (99-00-00-1).
 - 43 40 CFR 761, Manufacturing, Processing, and Distribution of PCBs in Commerce.
 - 44 Compliance Order on Consent Concerning Waste Chemicals (97-08-21-02).
 - 45 Waste Chemical Consent Order Number 97-08-21-02, Project Managers' Clarification Paper No. 3 (07/02/98).
 - 46 Compliance Order on Consent Concerning Idle Equipment and Hazardous Waste Tanks (97-08-21-01).
 - 47 Management Plan for Material Contained in Idle Equipment (94-MP/IE-0017).
 - 48 Waste Characterization, Generation, & Packaging (1-PRO-079-WGI-001), Nonradioactive Waste Packaging (1-C88-WP1027-NONRAD), Solid Radioactive Waste Packaging (4-D99-WO-1100), WEMS Waste Package Verification & Certification (4-G83-WEMS-WP-1209).
 - 49 40 CFR 300.440, National Oil and Hazardous Substances Pollution Contingency Plan, Procedures for Planning and Implementing Off-Site Response Actions.

-
- 50 Comprehensive Response, Compensation, and Liability Act, as amended by the Superfund Amendments and Reauthorization Act (SARA) and the Community Environmental Response Facilitation Act (CERFA), 42 USC 9601.
 - 51 5 CCR 1001-3, Regulation No. 1, Emission Controls for Particulates, Smoke, Carbon Monoxide, and Sulfur Oxides.
 - 52 5 CCR 1001-3, Regulation No. 3, Air Pollutant Emission Notice (APEN).
 - 53 6 CCR 1007-2, CDPHE Regulations Pertaining to the Disposal of Solid Waste.
 - 54 Migratory Bird Treaty Act, 16 USC 701 *et seq.*
 - 55 Fish and Wildlife Conservation Act, 16 USC 661 *et seq.*
 - 56 40 CFR 61, Subpart H, National Emissions Standards for Emission of Radionuclides Other than Radon from Department of Energy Facilities.
 - 57 Rocky Flats Cumulative Impacts Document (CID), latest revision.
 - 58 Endangered Species Act, 16 USC 1531, *et seq.*
 - 59 Migratory Bird Treaty Act, 16 USC 701, *et seq.*
 - 60 Specifications and Guidelines for Quality Systems for Environmental Data Collection and Environmental Technology Systems (ANSI/ASQC-E4), 1994.
 - 61 DOE Order 5700.6C, Quality Assurance.
 - 62 Quality Assurance Program Description, (RMRS-QAPD-001), Revision 2, April 15, 1998.
 - 63 RFETS Decommissioning Program Plan (October 8, 1998), Section 3.3.7.1, p. 24, (approved by CDPHE 11/4/98 and by EPA on 11/12/98).
 - 64 Memorandum of Understanding Governing Regulation and Oversight of Department of Energy Activities in the Rocky Flats Environmental Technology Site Industrial Area, entered into by DOE, EPA, CDPHE, and the DNFSB on February 15, 1996.

Appendix A - SET Descriptions, Endpoints, and Hazard Matrix

SET NO.	SET DESCRIPTION	MAJOR ENDPOINTS	ADDITIONAL CHARACTERIZATION NEEDED	UNIQUE HAZARD ANALYSIS	HAZARD CONTROL	WASTE STREAM
1	<p>GLOVEBOX SET - Room 125 and Dimensional Metrology Lab GB</p> <p><i>Beryllium:</i> Be contaminated clothes may have been laundered in this area in the 1950s & 1960s, and Be components may have been located on carts that were moved through or staged in this area.</p> <p><i>Chemicals:</i> Ethyl alcohol, 1,1,1-trichloroethane and oil were used in this area up until operations were suspended.</p> <p><i>Lead and Other Heavy Metals:</i> The paint on the floor may contain lead and other heavy metals; GB gloves contain lead.</p> <p><i>PCBs:</i> PCBs may be contained in paint. A PCB determination of ballasts will be made when the ballasts are removed.</p> <p><i>SNM Holdup:</i> SNM holdup is not expected in this SET since the critically limits were "No Fissile Materials."</p> <p><i>Radiological Contamination:</i> The GBs are expected to be contaminated > 10⁶ dpm Pu on the inner surface. There is fixed contamination on the floor and walls from the 1969 fire and major leaks from the GBs.</p>	<p><u>Deactivation:</u> Control/fix contamination Remove/dispose of loose combustibles Remove/dispose of loose equipment Control/fix contamination Remove/dispose of loose hazardous materials</p> <p><u>Decommissioning:</u> Drain/isolate fluid systems Control radioactive/chemical contamination Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Remove/dispose of utilities Package to waste acceptance criteria</p>	<p><i>Beryllium</i> <i>SNM Holdup Measurements</i> <i>Radiological Surveys</i></p>	<p>Beryllium High levels of radiological contamination</p>	<p>PPE Radiological Controls/ ALARA Principles CBDPP</p>	<p>TRU, TRM, LLW, LLM</p>
2	<p>ROOM SET - Rooms 126, 132, 133, 137B</p> <p><i>Lead and Other Heavy Metals:</i> The paint on the floor may contain lead or other RCRA heavy metals. The solder and printed circuit boards contain regulated quantities of lead.</p>	<p><u>Deactivation:</u> Control/fix contamination Remove/dispose of loose combustibles Remove/dispose of loose equipment Remove/dispose of loose hazardous materials</p> <p><u>Decommissioning:</u> Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria</p>		None	PPE	LLW, LLM
3	<p>EQUIPMENT SET - Hydraulic Oil System, 2nd Floor in Room 233A</p> <p><i>Chemicals:</i> The unit contains a significant quantity of hydraulic oil.</p>	<p><u>Deactivation:</u> Remove/dispose of loose combustibles Drain/isolate utility systems</p> <p><u>Decommissioning:</u> Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria</p>	<p><i>Chemicals:</i> Hydraulic oil</p>	None	PPE	LLW

SET NO.	SET DESCRIPTION	MAJOR ENDPOINTS	ADDITIONAL CHARACTERIZATION NEEDED	UNIQUE HAZARD ANALYSIS	HAZARD CONTROL	WASTE STREAM
4	<p>GLOVEBOX SET - Portion of Room 131 East/West D-Line and GBs 601, 602, 604, 605, 606, 608 and 612 (including Mixed Residue Tanks DL-776 & V-605 (2))</p> <p><i>Beryllium:</i> Be was machined in GB-605.</p> <p><i>SNM Holdup:</i> Several of the GBs currently contain significant Pu holdup.</p> <p><i>Radiological Contamination:</i> The GBs are expected to be contaminated >10⁶ cpm on the inner surfaces.</p>	<p><u>Deactivation:</u> Control/fix contamination Remove/package classified material Remove/dispose of loose combustibles Drain/dispose of solutions Remove/dispose of loose equipment Remove/dispose of loose hazardous material</p> <p><u>Decommissioning:</u> Drain/isolate fluid systems Control radioactive/chemical contamination Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria</p>	<p><i>Beryllium</i> <i>SNM Holdup Measurements</i> <i>Radiological Surveys</i></p>	<p>Beryllium</p> <p>High levels of radiological contamination</p>	<p>PPE</p> <p>Radiological Controls/ ALARA Principles</p> <p>CBDPP</p>	<p>TRU, TRM, LLW, LLM</p>
5	<p>GLOVEBOX SET - Portion of Room 131 East/West D-Line and GBs 601, 602, 605, 606, 608 (including Mixed Residue Tanks V-614, V-616, V-618, and V-620)</p> <p><i>Chemicals:</i> Carbon tetrachloride and Freon TF (1,1,2-trichloro-1,2,2-trifluoroethane) were used as solvents in these GBs. Texaco Regal #643 lubricating oil was used as a coolant to cut Pu parts.</p> <p><i>Lead & Other Heavy Metals:</i> There is lead shielding and leaded gloves on the GBs. The paint on the GBs may contain lead or other heavy metals. Leaded glass contains regulated quantities of barium and lead.</p> <p><i>SNM Holdup:</i> Several of the GBs contain significant Pu holdup.</p> <p><i>Radiological Contamination:</i> The GBs are expected to be contaminated.</p>	<p><u>Deactivation:</u> Control/fix contamination Remove/package classified material Remove/dispose of loose combustibles Drain/dispose solutions Remove/dispose of loose equipment Remove/dispose of loose hazardous materials</p> <p><u>Decommissioning:</u> Drain/isolate fluid systems Control radioactive/chemical contamination Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria</p>		None	PPE	LLM, TRU

SET NO.	SET DESCRIPTION	MAJOR ENDPOINTS	ADDITIONAL CHARACTERIZATION NEEDED	UNIQUE HAZARD ANALYSIS	HAZARD CONTROL	WASTE STREAM
6	<p>GLOVEBOX SET - Portion of Room 131 North/South D-Line and GBs 626-628, 630, 632, 636, and 642 (including Mixed Residue Tanks V-626 and V-627)</p> <p><i>Beryllium:</i> Be contaminated oil is present in this area.</p> <p><i>Chemicals:</i> Carbon tetrachloride and Freon TF (1,1,2, trichloro-1,2,2,2-trifluoroethane) were used as solvents in these GBs. Texaco Regal #643 lubricating oil was used as a coolant to cut Pu parts.</p> <p><i>Lead and Other Heavy Metals:</i> There is lead shielding and leaded gloves on the GBs. The paint on the GBs may contain lead or other RCRA heavy metals. Leaded glass contains regulated quantities of barium and lead.</p> <p><i>SNM Holdup:</i> Several of the GBs contain significant Pu holdup.</p> <p><i>Radiological Contamination:</i> The GBs are expected to be contaminated >10⁶ dpm Pu on the inner surfaces. Several of the GBs have less fixed contamination on the exterior; they are individually marked. The optical comparator may be contaminated with U-235.</p>	<p><u>Deactivation:</u></p> <ul style="list-style-type: none"> Control/fix contamination Remove/package classified material Remove/dispose of loose combustibles Drain/dispose of solutions Remove/dispose of loose equipment Remove/dispose of loose hazardous materials <p><u>Decommissioning:</u></p> <ul style="list-style-type: none"> Drain/isolate fluid systems Control radioactive/chemical contamination Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria 	<p><i>Beryllium</i></p> <p><i>Chemicals: Oil</i></p> <p><i>SNM Holdup Measurements</i></p> <p><i>Radiological Surveys</i></p>	Beryllium	<p>PPE</p> <p>CBDPP</p>	TRU, TRM, LLW, LLM

Building 776/777 Closure Project
Decommissioning Operations Plan

Revision 0
October 18, 1999

SET NO.	SET DESCRIPTION	MAJOR ENDPOINTS	ADDITIONAL CHARACTERIZATION NEEDED	UNIQUE HAZARD ANALYSIS	HAZARD CONTROL	WASTE STREAM
7	<p>TANK SET - Tanks 1103 (RCRA Unit 95.006), 1104 (RCRA Unit 95.007), 1106 (RCRA Unit 95.008) and associated ancillary equipment in Room 131</p> <p><i>Beryllium:</i> There is the possibility that liquids stored in the tank may be Be contaminated from Building 707 operations.</p> <p><i>Chemicals:</i> Carbon tetrachloride and Freon TF (1,1,2-trichloro-1,2,2-trifluoroethane) were used as solvents in some of the GBs. Lubricating oils was used as a coolant to cut Pu parts. In the 1970s perchloroethylene was used in place of carbon tetrachloride in certain operations.</p> <p><i>Lead & Other Heavy Metals:</i> The paint on the tanks might contain lead & other heavy metals. Based on historical analysis, there are detectable levels of barium, chromium and lead in the sludge.</p> <p><i>SNM Holdup:</i> The tanks have significant Pu holdup. High hold-up levels will be reduced to below safeguards termination limits during deactivation activities (ring and sludge removal).</p> <p><i>Radiological Contamination:</i> The tanks are assumed to be externally contaminated with Pu since they are in contamination control houses.</p>	<p><u>Deactivation:</u> Control/fix contamination Remove/dispose of loose combustibles Drain/dispose of solutions Remove/dispose of loose equipment Remove/dispose of loose hazardous materials</p> <p><u>Decommissioning:</u> Drain/isolate fluid systems Control radioactive/chemical contamination Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria</p>	<p>Liquids</p> <p>SNM Holdup Measurements</p> <p>Radiological Surveys</p>	<p>Beryllium</p> <p>High levels of radiological contamination</p>	<p>PPE</p> <p>CBDPP</p> <p>Radiological Controls/ALARA Principles</p>	TRM
8	<p>ROOM SET - Rooms 120, 130B, 131 (RCRA Unit 90.49), 131A, and Dock 1</p> <p><i>Chemicals:</i> Carbon Tetrachloride and Freon TF (1,1,2-trichloro-1,2,2-trifluoroethane) were used as solvents in the GBs located in Room 134E. Lubricating oil was used as a coolant to cut Pu parts.</p> <p><i>Lead & Other Heavy Metals:</i> The paint on the floor and walls may contain lead & other heavy metals. Printed circuit boards in the control equipment will be handled as RCRA waste due to lead in the solder. The incandescent and fluorescent lights may contain lead and mercury, respectively.</p>	<p><u>Deactivation:</u> Control/fix contamination Remove/package classified material Remove/dispose of loose combustibles Remove/dispose of loose equipment Remove/dispose of loose hazardous materials</p> <p><u>Decommissioning:</u> Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria</p>		None	PPE	LLW, LLM

SET NO.	SET DESCRIPTION	MAJOR ENDPOINTS	ADDITIONAL CHARACTERIZATION NEEDED	UNIQUE HAZARD ANALYSIS	HAZARD CONTROL	WASTE STREAM
9	<p>ROOM SET - Room 134E</p> <p><i>Chemicals:</i> Carbon tetrachloride and Freon TF were used as solvents in the GBs. Lubricating oil was used as a coolant to cut Pu parts.</p> <p><i>Lead & Other Heavy Metals:</i> The paint on the floor and walls may contain lead & other heavy metals. The gloveport covers and aprons in the cabinet contain lead. Printed circuit boards in control equipment will be handled as RCRA waste due to the lead in solder. Incandescent lights contain lead and fluorescent lights contain mercury; these lights will be managed as hazardous waste.</p> <p><i>PCBs:</i> A PCB determination of ballasts will be made when the ballasts are removed. Any paint analyzed for lead & other heavy metals will be analyzed for PCBs.</p> <p><i>Radiological Contamination:</i> There are several High Contamination Areas in GBs; the contamination is mainly in the form of Pu-contaminated oil. It is assumed that the fixed contamination under paint on the floors is the same as the contamination levels detected after the 1969 fire (i.e., $>10^6$ cpm/cm²).</p>	<p><i>Deactivation:</i> Control/fix contamination Remove/dispose of loose combustibles Remove/dispose of loose equipment Remove/dispose of loose hazardous materials</p> <p><i>Decommissioning:</i> Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria</p>	<p><i>Radiological Surveys</i></p>	<p>High radiological contamination areas</p>	<p>PPE</p> <p>Radiological Controls/ ALARA Principles</p>	<p>LLW, LLM</p>
10	<p>GLOVEBOX SET - Room 134E, GBs 505, 509, 751, 752, 624 and Associated M-Line & North/South D-Line (including Mixed Residue Tank V-752)</p> <p><i>Chemicals:</i> Carbon tetrachloride, 1,1,1-trichloroethane and Freon TF were used as solvents in these GBs. Texaco Regal #643 lubricating oil was used as a coolant to cut Pu parts.</p> <p><i>Lead & Other Heavy Metals:</i> There is lead shielding and leaded gloves on the GBs. The paint on the GBs may contain lead or other heavy metals.</p> <p><i>SNM Holdup:</i> GB 752 contains significant Pu holdup that will be removed prior to decommissioning.</p> <p><i>Radiological Contamination:</i> The GBs are expected to be contaminated to $>10^6$ dpm Pu on the inner surfaces.</p>	<p><i>Deactivation:</i> Control/fix contamination Remove/package classified material Remove/dispose of loose combustibles Drain/dispose of solutions Remove/dispose of loose equipment Remove/dispose of loose hazardous materials</p> <p><i>Decommissioning:</i> Drain/isolate fluid systems Control radioactive/chemical contamination Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria</p>	<p><i>SNM Holdup Measurements</i> <i>Radiological Surveys</i></p>	<p>High levels of radiological contamination</p>	<p>PPE</p> <p>Radiological Controls/ ALARA Principles</p>	<p>TRU, TRM, LLW, LLM</p>

SET NO.	SET DESCRIPTION	MAJOR ENDPOINTS	ADDITIONAL CHARACTERIZATION NEEDED	UNIQUE HAZARD ANALYSIS	HAZARD CONTROL	WASTE STREAM
11	<p>GLOVEBOX SET - Room 134E, GBs 746, 747, 748, 749, and Associated M-Lines, (Including Tank T-7 [RCRA Unit 95.014] and Mixed Residue Tanks V-746, V-747, V-748, & V-749)</p> <p><i>Chemicals:</i> Carbon Tetrachloride and Freon TF were used as solvents in these GBs. Texaco Regal #643 lubricating oil was used as a coolant to cut Pu parts.</p> <p><i>Lead & Other Heavy Metals:</i> There is lead shielding and leaded gloves on the GBs. Leaded glass on the GB contains regulated quantities of barium and lead. The paint on the GBs may contain lead and other heavy metals.</p> <p><i>SNM Holdup:</i> GB746 contains significant Pu holdup; several of the remaining GBs contain measurable Pu holdup. GBs 746, 748, and 749 contain less than 15 grams uranium (U) holdup each.</p> <p><i>Radiological Contamination:</i> The GBs are expected to be contaminated >10⁶ dpm Pu on the inner surface. Several of the GBs have less fixed contamination on the exterior.</p>	<p><u>Deactivation:</u> Control/fix contamination Remove/package classified material Remove/discard of loose combustibles Drain/discard of solutions Remove/discard of loose equipment Remove/discard of loose hazardous materials</p> <p><u>Decommissioning:</u> Drain/isolate systems Control radioactive/chemical contamination Drain/isolate/remove/discard of utility systems Remove/discard of equipment & associated piping/conduit Package to waste acceptance criteria</p>	<p><i>SNM Holdup Measurements</i> <i>Radiological Surveys</i></p>	<p>High levels of radiological contamination</p>	<p>PPE Radiological Controls/ ALARA Principles</p>	<p>TRU, TRM, LLW, LLM</p>
12	<p>ROOM SET - Rooms 401, 402, 402A, 403, 404, 405, 406, 407, 409, 410, and 411</p> <p><i>Asbestos:</i> Rooms 495 and 410 have tile floors that may contain asbestos. There may be floor tile is under the carpet in Room 408 that may contain asbestos.</p> <p><i>Beryllium:</i> Based on the type of work performed in Room 408, Be is likely to be present. Be contamination has been detected in Room 401.</p> <p><i>Lead & Other Heavy Metals:</i> The paint on the floor and walls may contain lead or other heavy metals. Incandescent lights contain lead and fluorescent lights contain mercury; these lights will be managed as hazardous waste.</p> <p><i>PCBs:</i> PCBs may be in fluorescent light ballasts. Any paint sampled for lead or other heavy metals will be sampled for PCBs.</p> <p><i>Radiological Contamination:</i> There is fixed contamination in Rooms 402, 402A and 411 beneath the paint on the floor and original walls as a result of the 1969 fire. Floor contamination levels after the fire were up to 10⁶ cpm.</p>	<p><u>Deactivation:</u> Remove/discard of loose combustibles Remove/discard of loose equipment Remove/discard of loose hazardous materials</p> <p><u>Decommissioning:</u> Drain/isolate/remove/discard of utility systems Remove/discard of equipment & associated piping/conduit Package to waste acceptance criteria</p>	<p><i>Asbestos</i> <i>Beryllium</i> <i>Radiological Surveys</i></p>	<p>Beryllium High levels of radiological contamination</p>	<p>PPE Radiological Controls/ ALARA Principles CBDPP</p>	<p>LLW, LLM, SAN, HAZ</p>

Building 77 Closure Project
Decommissioning Operations Plan

Revision 0
October 18, 1999

SET NO.	SET DESCRIPTION	MAJOR ENDPOINTS	ADDITIONAL CHARACTERIZATION NEEDED	UNIQUE HAZARD ANALYSIS	HAZARD CONTROL	WASTE STREAM
13	ROOM SET - Rooms 416, 416B, 417, 418, 419, 420, 429, 431, 431A, and 431B <i>Asbestos:</i> There are floor tiles in Room 419 that may contain asbestos. <i>Beryllium:</i> A grit blaster for Be parts was operated in Room 416 in the 1960s. R&D welding was performed in Room 416 in the same time period. Be contamination has been detected in Room 416.	Deactivation: Control/fix contamination Remove/package classified material Remove/dispose of loose combustibles Remove/dispose of loose equipment Remove/dispose of loose hazardous materials Decommissioning: Drain/isolate/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria	<i>Asbestos</i> <i>Beryllium</i>	Beryllium	PPE BCDDP	LLW

SET DESCRIPTION	MAJOR ENDPOINTS	ADDITIONAL CHARACTERIZATION NEEDED	UNIQUE HAZARD ANALYSIS	HAZARD CONTROL	WASTE STREAM
<p>14 ROOM/EQUIPMENT SET - Room 415 and associated GBs 201 through 205, 207 through 214, and 216 through 222</p> <p><i>Beryllium:</i> R&D welding was performed within Room 416 in the 1960s.</p> <p><i>Chemicals:</i> 1,1,1-Trichloroethane was used to clean specimens and wet the grit for polishing within the GBs. Ethanol was also used to clean specimens. A kerosene/diamond paste mixture was used in the polishers. Inorganic chemicals used in the GBs include electrolytic solution, oxalic acid and sodium hydride.</p> <p><i>Lead & Other Heavy Metals:</i> The paint on the floor and walls may contain lead or other RCRA heavy metals. The incandescent and fluorescent lights can contain lead and mercury, respectively.</p> <p><i>PCBs:</i> A PCB determination of ballasts will be made when the ballasts are removed. Any paint analyzed for lead & other heavy metals will be analyzed for PCBs.</p> <p><i>SNM Holdup:</i> To be determined.</p> <p><i>Radioisotope Sources:</i> The sources from the alphamet monitors in Room 415 will be removed during deactivation.</p> <p><i>Radiological Contamination:</i> The GBs are expected to be contaminated >10⁵ dpm Pu on the inner surface. There is fixed contamination beneath the paint on the floor and the building walls from the 1969 fire. It is assumed that floor contamination levels are the same as those after the 1969 fire (i.e., 250 - 10⁵ cpm).</p>	<p><u>Deactivation:</u> Control/fix contamination Remove/package classified material Remove/dispose of loose combustibles Drain/dispose of solutions Remove/dispose of loose equipment Remove/dispose of loose hazardous materials</p> <p><u>Decommissioning:</u> Drain/isolate fluid systems Control radioactive/chemical contamination Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria</p>	<p><i>Beryllium</i> <i>SNM Holdup Measurements</i> <i>Radiological Surveys</i></p>	<p>Beryllium High levels of radiological contamination</p>	<p>PPE CBDPP Radiological Controls/ ALARA Principles</p>	<p>TRU, TRM, LLW, LLM</p>
<p>15 ROOM SET - Room 416A (Vault)</p> <p><i>Beryllium:</i> Be parts were stored on carts. R&D welding was performed in the 1960s. Be may have been welded or brazed in the equipment located in this room.</p> <p><i>Lead & Other Heavy Metals:</i> The paint on the floor and wall may contain lead and other RCRA heavy metals. Incandescent lights contain lead and fluorescent lights contain mercury; these lights will be managed as hazardous waste.</p> <p><i>PCBs:</i> A PCB determination of ballasts will be made when the ballasts are removed. PCBs may be present in paint.</p> <p><i>Radiological Contamination:</i> There is fixed contamination beneath the paint on the floor and the building walls from the 1969 fire. It is assumed that floor contamination levels are the same as those after the 1969 fire (i.e., 10⁵ - 10⁶ cpm).</p>	<p><u>Deactivation:</u> Control/fix contamination Remove/package classified material Remove/dispose of loose combustibles Remove/dispose of loose equipment Remove/dispose of loose hazardous materials</p> <p><u>Decommissioning:</u> Drain/isolate/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria</p>	<p><i>Beryllium</i> <i>Radiological Surveys</i></p>	<p>Beryllium High levels of radiological contamination</p>	<p>PPE CBDPP Radiological Controls/ ALARA Principles</p>	<p>LLW, LLM</p>

SET NO.	SET DESCRIPTION	MAJOR ENDPOINTS	ADDITIONAL CHARACTERIZATION NEEDED	UNIQUE HAZARD ANALYSIS	HAZARD CONTROL	WASTE STREAM
16	<p>ROOM SET - Rooms 426, 427, 427A, and 428</p> <p><i>Beryllium:</i> Be has been detected in the hood above the washing machine. There are no records to indicate the source of Be contamination.</p> <p><i>Chemicals:</i> Soaps, detergent, and bleach were used within Rooms 426, 427 and 428.</p> <p><i>Lead & Other Heavy Metals:</i> The paint on the floor and walls may contain lead or other RCRA heavy metals. Incandescent lights contain lead and fluorescent lights contain mercury; these lights will be managed as hazardous waste.</p> <p><i>PCBs:</i> A PCB determination of ballasts will be made when the ballasts are removed. PCBs may be present in paint.</p> <p><i>Radiological Contamination:</i> There is fixed contamination beneath the paint on the floor and building walls from the 1969 fire. It is assumed that the floor contamination levels are the same as those after the 1969 fire (i.e., 10^5 - 10^6 cpm). The drains from the process sinks are assumed to be contaminated based on their usage.</p>	<p><u>Deactivation:</u> Control/fix contamination Remove/dispose of loose combustibles Drain/dispose of solutions Remove/dispose of loose equipment Remove/dispose of loose hazardous materials</p> <p><u>Decommissioning:</u> Drain/isolate/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria</p>	<p><i>Beryllium</i></p> <p><i>SVM Holdup Measurements</i></p> <p><i>Radiological Surveys</i></p>	Beryllium	PPE CBDPP	LLW, LLM
17	<p>GLOVEBOX SET - Room 430, GB 481</p> <p><i>Chemicals:</i> A catalyst column is filled with palladium metal that is mounted to the Superdry facility wall.</p> <p><i>Lead & Other Heavy Metals:</i> There is lead shielding and leaded gloves on the GBs. The paint on the GBs may contain lead or other RCRA heavy metals. Leaded glass on the GBs contains regulated quantities of barium and lead.</p> <p><i>Radiological:</i> Since the GB was never used, there is no contamination inside the GB. However, since the outside of the GB is painted, the GB may not be free released.</p>	<p><u>Deactivation:</u> Remove/dispose of loose combustibles Drain/dispose of solutions Remove/dispose of loose hazardous materials</p> <p><u>Decommissioning:</u> Drain/isolate utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria</p>	<i>Radiological Surveys</i>	None	PPE Radiological Controls/ ALARA Principles	LLW, LLM

SET NO.	SET DESCRIPTION	MAJOR ENDPOINTS	ADDITIONAL CHARACTERIZATION NEEDED	UNIQUE HAZARD ANALYSIS	HAZARD CONTROL	WASTE STREAM
18	<p>GLOVEBOX SET - Room 430, GBs 360, 361, 362, 363, 364, 367, 368, 369, 370, 371, 372, 373, 465, and associated G2-Line</p> <p><i>Chemicals:</i> Carbon tetrachloride and Freon TF were used as solvents in these GBs.</p> <p><i>Lead & Other Heavy Metals:</i> There is lead shielding and leaded gloves on the GBs. The paint on the GBs may contain lead or other RCRA heavy metals. Leaded glass on the GBs contains regulated quantities of barium and lead.</p> <p><i>PCBs:</i> PCBs may be present in paint.</p> <p><i>SNM Holdup:</i> GB 362 contains Pu holdup. No measurable U holdup has been detected to date. There are other GBs in this SET where holdup is not yet determined.</p> <p><i>Radiological Contamination:</i> The GBs are expected to be contaminated >10⁶ dpm Pu on the inner surfaces. Several of the GBs have less fixed contamination on the exterior; they are individually marked.</p>	<p><u>Deactivation:</u> Control/fix contamination Remove/package classified material Remove/dispose of loose combustibles Drain/dispose of solutions Remove/dispose of loose equipment Remove/dispose of loose hazardous materials</p> <p><u>Decommissioning:</u> Drain/isolate fluid systems Control radioactive/chemical contamination Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria</p>	<p><i>SNM Holdup Measurements</i> <i>Radiological Surveys</i></p>	High levels of radiological contamination	<p>PPE</p> <p>Radiological Controls/ ALARA Principles</p>	<p>TRU, TRM, LLW, LLM</p>
19	<p>ROOM SET - Room 154A</p> <p><i>Lead & Other Heavy Metals:</i> The paint on the floor and walls may contain lead or other RCRA heavy metals. Incandescent lights contain lead and fluorescent lights contain mercury; these lights will be managed as hazardous waste.</p> <p><i>PCBs:</i> A PCB determination of ballasts will be made when the ballasts are removed. PCBs may be present in paint.</p> <p><i>Radiological Contamination:</i> There is fixed contamination beneath the paint on the floor and the building walls from the 1969 fire. It is assumed that floor contamination levels are the same as those after the 1969 fire (10⁷ - 10⁸ cpm).</p>	<p><u>Deactivation:</u> Control/fix contamination Remove/dispose of loose combustibles Drain/dispose solutions Remove/dispose of loose equipment Remove/dispose of loose hazardous materials</p> <p><u>Decommissioning:</u> Drain/isolate fluid systems Control radioactive/chemical contamination Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria</p>	<i>Radiological Surveys</i>	High levels of radiological contamination	<p>PPE</p> <p>Radiological Controls/ ALARA Principles</p>	<p>LLW, LLM</p>

SET NO.	SET DESCRIPTION	MAJOR ENDPOINTS	ADDITIONAL CHARACTERIZATION NEEDED	UNIQUE HAZARD ANALYSIS	HAZARD CONTROL	WASTE STREAM
20	<p>GLOVEBOX SET - Room 430, GBs 401, 402, Hood Area, and Room 424</p> <p><i>Beryllium:</i> Be was machined in GBs 401 and 402. Be salts were handled in the hoods in Room 424. Surveys confirmed the presence of Be in these areas.</p> <p><i>Chemicals:</i> 1,1,1-trichloroethane was used on wipes within the GBs. Oil from the vacuum pumps will be removed during deactivation.</p> <p><i>Lead & Other Heavy Metals:</i> The paint on the floor and walls may contain lead or other RCRA heavy metals. Incandescent lights contain lead and fluorescent lights contain mercury; these lights will be managed as hazardous waste.</p> <p><i>PCBs:</i> A PCB determination of ballasts will be made when the ballasts are removed. PCBs may be present in paint.</p> <p><i>SNM Holdup:</i> Not determined. The two lathe B-boxes will be scanned for holdup.</p> <p><i>Radiological Sources:</i> There are two registered sources in Room 424. These sources will be removed during deactivation.</p> <p><i>Radiological Contamination:</i> There is fixed contamination beneath the paint on the floor and the building walls from the 1969 fire. It is assumed that floor contamination levels are the same as those after the 1969 fire (i.e., $>10^5$ cpm).</p>	<p><u>Deactivation:</u></p> <ul style="list-style-type: none"> Control/fix contamination Remove/package classified material Remove/discard of loose combustibles Drain/discard of solutions Remove/discard of loose equipment Remove/discard of loose hazardous materials <p><u>Decommissioning:</u></p> <ul style="list-style-type: none"> Drain/isolate fluid systems Control radioactive/chemical contamination Drain/isolate/remove/discard of utility systems Remove/discard of equipment & associated piping/conduit Package to waste acceptance criteria 	<p><i>Beryllium</i></p> <p><i>SNM Holdup Measurements</i></p> <p><i>Radiological Surveys</i></p>	<p>Beryllium</p> <p>High levels of radiological contamination</p>	<p>PPE</p> <p>CBDPP</p> <p>Radiological Controls/ALARA Principles</p>	<p>TRU, TRM, LLW, LLM</p>

SET NO.	SET DESCRIPTION	MAJOR ENDPOINTS	ADDITIONAL CHARACTERIZATION NEEDED	UNIQUE HAZARD ANALYSIS	HAZARD CONTROL	WASTE STREAM
21	<p>GLOVEBOX SET - Room 430, GBs 403, 404, 405, 408, 409, 413, 426, 427, 450, and associated A-Line</p> <p><i>Beryllium:</i> Be was handled in GB427.</p> <p><i>Chemicals:</i> 1,1,1-trichloroethane was used on wipes and inside the ultrasonic cleaner/vapor degreaser within the GBs. Oil from the vacuum pumps will be removed during deactivation.</p> <p><i>Lead & Other Heavy Metals:</i> The paint on the floor and walls may contain lead or other RCRA heavy metals. Incandescent lights contain lead and fluorescent lights contain mercury; these lights will be managed as hazardous waste.</p> <p><i>PCBs:</i> A PCB determination of ballasts will be made when the ballasts are removed. PCBs may be present in paint.</p> <p><i>SNM Holdup:</i> It has not been determined if there is holdup in the GBs.</p> <p><i>Radiological Sources:</i> The sources in the alphabet monitors will be removed during deactivation.</p> <p><i>Radiological Contamination:</i> The GBs are expected to be contaminated >10⁶ dpm Pu on the inner surfaces. Some of the GBs may be internally contaminated with enriched U.</p>	<p><u>Deactivation:</u> Control/fix contamination Remove/package classified material Remove/dispose of loose combustibles Drain/dispose of solutions Remove/dispose of loose equipment Remove/dispose of loose hazardous materials</p> <p><u>Decommissioning:</u> Drain/isolate fluid systems Control radioactive/chemical contamination Drain/isolate/remove/dispose of utility system Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria</p>	<p><i>Beryllium</i> <i>SNM Holdup Measurements</i> <i>Radiological Surveys</i></p>	<p>Beryllium High levels of radiological contamination</p>	<p>PPE CBDPP Radiological Controls/ ALARA Principles</p>	<p>TRU, TRM, LLW, LLM</p>
22	<p>GLOVEBOX SET - Room 430, GBs 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 451, 452, 454, 456, 457, 458, 459, 462, 464 and associated A-Line</p> <p><i>Beryllium:</i> Be was handled in GBs 448, 451, 451 and 454.</p> <p><i>Chemicals:</i> 1,1,1-trichloroethane was used on wipes and inside the ultrasonic cleaner/vapor degreaser within the GBs. Oil from the vacuum pumps will be removed during deactivation.</p> <p><i>Lead & Other Heavy Metals:</i> The paint on the floor and walls may contain lead or other RCRA heavy metals. Incandescent lights contain lead and fluorescent lights contain mercury; these lights will be managed as hazardous waste.</p> <p><i>PCBs:</i> A PCB determination of ballasts will be made when the ballasts are removed. PCBs may be present in paint.</p> <p><i>SNM Holdup:</i> It has not yet been determined if these GBs contain holdup.</p> <p><i>Radiological Contamination:</i> The GBs are expected to be contaminated >10⁶ dpm Pu on the inner surfaces. Some of the GBs may be internally contaminated with enriched and depleted U.</p>	<p><u>Deactivation:</u> Control/fix contamination Remove/package classified material Remove/dispose of loose combustibles Drain/dispose of solutions Remove/dispose of loose equipment Remove/dispose of loose hazardous materials</p> <p><u>Decommissioning:</u> Drain/isolate fluid systems Control radioactive/chemical contamination Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria</p>	<p><i>Beryllium</i> <i>SNM Holdup Measurements</i> <i>Radiological Surveys</i></p>	<p>Beryllium High levels of radiological contamination</p>	<p>PPE CBDPP Radiological Controls/ ALARA Principles</p>	<p>TRU, TRM, LLW, LLM</p>

SET NO.	SET DESCRIPTION	MAJOR ENDPOINTS	ADDITIONAL CHARACTERIZATION NEEDED	UNIQUE HAZARD ANALYSIS	HAZARD CONTROL	WASTE STREAM
23	<p>GLOVEBOX SET - Room 430, GB 515, associated R-Line, and GBs 318, 320, 321, 323, 324, 327, 328, 329, 330, and 331</p> <p><i>Chemicals:</i> Carbon tetrachloride, 1,1,1-trichloroethane and Freon TF were used on wipes in the GBs.</p> <p><i>Lead & Other Heavy Metals:</i> There is lead shielding and leaded gloves on the GBs. There are lead counterweights on the equipment in GB 318. The paint on the floor and walls may contain lead or other RCRA heavy metals. Fluorescent lights contain mercury; these lights will be managed as hazardous waste.</p> <p><i>PCBs:</i> A PCB determination of ballasts will be made when the ballasts are removed. PCBs may be present in paint.</p> <p><i>SNM Holdup:</i> It has not yet been determined if these GBs contain holdup.</p> <p><i>Radiological Contamination:</i> The GBs are expected to be contaminated $>10^6$ dpm Pu on the inner surfaces.</p>	<p><u>Deactivation:</u></p> <p>Control/fix contamination</p> <p>Remove/package classified</p> <p>Remove/dispose of loose combustibles</p> <p>Drain/dispose of solutions</p> <p>Remove/dispose of loose equipment</p> <p>Remove/dispose of loose hazardous materials</p> <p><u>Decommissioning:</u></p> <p>Drain/isolate fluid systems</p> <p>Control radioactive/chemical contamination</p> <p>Drain/isolate/remove/dispose of utility systems</p> <p>Remove/dispose of equipment & associated piping/conduit</p> <p>Package to waste acceptance criteria</p>	<p>SNM Holdup Measurements</p> <p>Radiological Surveys</p>	<p>High levels of radiological contamination</p>	<p>PPE</p> <p>Radiological Controls/ALARA Principles</p>	<p>TRU, TRM, LLW, LLM</p>
24	<p>GLOVEBOX SET - Room 430, GBs 756, 758, 759, 760, 761, 762, 763, 764, and associated M-Line</p> <p><i>Chemicals:</i> Carbon tetrachloride and Freon TF were used on wipes within the GBs.</p> <p><i>Lead & Other Heavy Metals:</i> There is lead shielding and leaded gloves on the GBs. There are lead counterweights on the equipment in GB 758. The paint on the floor and walls may contain lead or other RCRA heavy metals. Fluorescent lights contain mercury; these lights will be managed as hazardous waste.</p> <p><i>PCBs:</i> A PCB determination of ballasts will be made when the ballasts are removed. PCBs may be present in paint.</p> <p><i>SNM Holdup:</i> It has not yet been determined if these GBs contain holdup.</p> <p><i>Radiological Contamination:</i> The sources in the alphamet monitors will be removed during deactivation.</p> <p><i>Radiological Contamination:</i> The GBs (except GB 764) are expected to be contaminated $>10^6$ dpm Pu on the inner surface. The outer surfaces of the GBs are contaminated up to 250,000 dpm. GB 764 was never used and has little or no radioactive contamination.</p>	<p><u>Deactivation:</u></p> <p>Control/fix contamination</p> <p>Remove/package classified material</p> <p>Remove/dispose of loose combustibles</p> <p>Drain/dispose of solutions</p> <p>Remove/dispose of loose equipment</p> <p>Remove/dispose of loose hazardous materials</p> <p><u>Decommissioning:</u></p> <p>Drain/isolate fluid systems</p> <p>Control radioactive/chemical contamination</p> <p>Drain/isolate/remove/dispose of utility systems</p> <p>Remove/dispose of equipment & associated piping/conduit</p> <p>Package to waste acceptance criteria</p>	<p>SNM Holdup Measurements</p> <p>Radiological Surveys</p>	<p>High levels of radiological contamination</p>	<p>PPE</p> <p>Radiological Controls/ALARA Principles</p>	<p>TRU, TRM, LLW, LLM</p>

SET NO.	SET DESCRIPTION	MAJOR ENDPOINTS	ADDITIONAL CHARACTERIZATION NEEDED	UNIQUE HAZARD ANALYSIS	HAZARD CONTROL	WASTE STREAM
25	<p>ROOM SET - Room 430, including RCRA Unit 777.1 (i.e., Areas 2 & 3)</p> <p><i>Asbestos:</i> There is insulation on small tank(s) and tritium dryers in this SET. This insulation will be managed as asbestos waste.</p> <p><i>Beryllium:</i> Be was machined in GBs 401 and 402 in Room 430. Be salts were handled in the hoods in Room 424, which is on the southern border of this SET. Previous surveys have confirmed the presence of Be contamination.</p> <p><i>Chemicals:</i> Water in Tank RT-1 and oil in the vacuum pumps will be drained during deactivation.</p> <p><i>Lead & Other Heavy Metals:</i> There is lead metal on the drum shields and leaded gloves stored in this room. The paint on the floor and walls may contain lead or other RCRA heavy metals. Incandescent lights contain lead and fluorescent lights contain mercury; these lights will be managed as hazardous waste.</p> <p><i>PCBs:</i> A PCB determination of ballasts will be made when the ballasts are removed. PCBs may be present in paint.</p> <p><i>Radioactive Sources:</i> Sources on combo monitors will be removed during deactivation.</p> <p><i>Radiological Contamination:</i> Gettering system tank RT-1 is marked as Pu and tritium contaminated.</p>	<p>Deactivation: Control/fix contamination Remove/package classified material Remove/dispose of loose combustibles Remove/dispose of loose equipment Remove/dispose of loose hazardous materials</p> <p>Decommissioning: Drain/isolate/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria</p>	<p><i>Beryllium</i> <i>SNM Holdup Measurements</i> <i>Radiological Surveys</i></p>	<p>Beryllium Tritium</p>	<p>PPE CBDPP Radiological Controls/ ALARA Principles</p>	<p>LW, LLM</p>
26	<p>TANK SET - Room 430, Tanks T-1 (RCRA Unit 95.015), T-2 (RCRA Unit 95.016), and FL-1</p> <p><i>Beryllium:</i> Be metal was not routinely cleaned in ultrasonic cleaners after the late 1960s - early 1970s. Prior to this period, an ultrasonic cleaner for grit blasted Be parts operated in Room 418. It is not clear if the SET 26 tanks were installed before or after the ultrasonic cleaner was removed from Room 418.</p> <p><i>Chemicals:</i> 1,1,1-trichloroethane was stored in the tanks. Prior to 1974, trichloroethylene was used in place of 1,1,1-trichloroethane.</p> <p><i>Lead & Other Heavy Metals:</i> The paint on the tanks and filter GB may contain lead or other RCRA heavy metals.</p> <p><i>PCBs:</i> PCBs may be present in paint.</p> <p><i>SNM Holdup:</i> The tanks were scanned in 1990 and 1994 for holdup. The holdup is less than 50 grams per tank. Holdup levels will be reduced during deactivation.</p> <p><i>Radiological Contamination:</i> The tanks are assumed to be externally contaminated with Pu since they are in contamination control houses.</p>	<p>Deactivation: Control/fix contamination Remove/dispose of loose combustibles Drain/dispose of solutions Remove/dispose of loose equipment Remove/dispose of loose hazardous materials</p> <p>Decommissioning: Drain/isolate fluid systems Control radioactive/chemical contamination Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria</p>	<p><i>Beryllium</i> <i>SNM Holdup Measurements</i> <i>Radiological Surveys</i></p>	<p>Beryllium</p>	<p>PPE CBDPP</p>	<p>TRU, TRM</p>

SET NO.	SET DESCRIPTION	MAJOR ENDPOINTS	ADDITIONAL CHARACTERIZATION NEEDED	UNIQUE HAZARD ANALYSIS	HAZARD CONTROL	WASTE STREAM
27	<p>ROOM/EQUIPMENT SET - Rooms 432, 432A, 432B, 432C (RCRA Unit 777.1), 432D, 440, and GB 461</p> <p><i>Asbestos:</i> A small oven in this SET is insulated with Transite.</p> <p><i>Beryllium:</i> Be parts were stored, cleaned and assembled in the Superdry facility.</p> <p><i>Chemicals:</i> 1,1,1-trichloroethane was used in the ultrasonic cleaners in Room 440. Prior to 1974, trichloroethylene was used in place of 1,1,1-trichloroethane. The oil in the machinery will be removed during deactivation. A palladium metal filled catalyst column for SET 17 is attached to the north exterior wall of the SET.</p> <p><i>Lead & Other Heavy Metals:</i> There is lead metal stored in the room. The paint on the floor and walls may contain lead or other RCRA heavy metals. Incandescent lights contain lead and fluorescent lights contain mercury; these lights will be managed as hazardous waste.</p> <p><i>PCBs:</i> A PCB determination of ballasts will be made when the ballasts are removed. PCBs may be present in paint.</p> <p><i>SNM Holdup:</i> It is not yet determined if the lathes in Room 432D and the downdraft table in Room 432B contain SNM holdup.</p> <p><i>Radiological Contamination:</i> There are used tritium dryers with unknown levels of contamination. Depleted and enriched U contamination is possible in this SET. Room 432B and the lathe in Room 432D are posted as high contamination areas. The posted contamination within Room 432B is 500,000 cpm.</p>	<p>Deactivation: Control/fix contamination Remove/package classified material Remove/discard of loose combustibles Drain/discard solutions Remove/discard of loose equipment Remove/discard of loose hazardous materials</p> <p>Decommissioning: Drain/isolate fluid systems Control radioactive/chemical contamination Drain/isolate/discard of utility systems Remove/discard of equipment & associated piping/conduit Package to waste acceptance criteria</p>	<p><i>Beryllium</i> <i>SNM Holdup Measurements</i> <i>Radiological Surveys</i></p>	<p>Beryllium Tritium</p>	<p>PPE CBDPP Radiological Controls/ ALARA Principles</p>	<p>TRU, LLW, LLM</p>
28	<p>ROOM SET - Room 433</p> <p><i>Beryllium:</i> Be parts were handled in this area in the 1960s and may have been transported through the room after the 1960s. Be contamination has been found near SET 28 in SET 20.</p> <p><i>Chemicals:</i> The flammable cabinets contain two drums of epoxy and catalyst. These drums will be removed during deactivation.</p> <p><i>Lead & Other Heavy Metals:</i> There is a leaded glove and a box of leaded glass stored in the room. The paint on the floor and walls may contain lead or other RCRA heavy metals. Incandescent lights contain lead and fluorescent lights contain mercury; these lights will be managed as hazardous waste.</p> <p><i>PCBs:</i> A PCB determination of ballasts will be made when the ballasts are removed. PCBs may be present in paint.</p> <p><i>Radiological Contamination:</i> A transformer in the SET is marked as having 50,000 dpm fixed contamination.</p>	<p>Deactivation: Control/fix contamination Remove/discard of loose combustibles Remove/discard of loose equipment Remove/discard of loose hazardous materials</p> <p>Decommissioning: Drain/isolate/discard of utility systems Remove/discard of equipment & associated piping/conduit Package to waste acceptance criteria</p>	<p><i>Beryllium</i> <i>Radiological Surveys</i></p>	<p>Beryllium</p>	<p>PPE CBDPP</p>	<p>LLW, LLM</p>

SET NO.	SET DESCRIPTION	MAJOR ENDPOINTS	ADDITIONAL CHARACTERIZATION NEEDED	UNIQUE HAZARD ANALYSIS	HAZARD CONTROL	WASTE STREAM
29	<p>GLOVEBOX SET - Room 437, GB A1, A2 and A3, and associated conveyor lines</p> <p><i>Beryllium:</i> Leak detector parts stored in the room have manufacturer warnings regarding Be in the ceramic rings.</p> <p><i>Chemicals:</i> 1,1,1-trichloroethane and Freon TF were use as solvents in these GBs. Containerized chemicals will be removed during deactivation.</p> <p><i>Lead & Other Heavy Metals:</i> There is lead shielding and leaded gloves on the GBs. Leaded GB covers, gloves, and an apron are stored in the cabinets. Leaded glass in the GB windows contains regulated quantities of barium and lead. The paint on the floors, walls and GBs may contain lead or other RCRA heavy metals.</p> <p><i>PCBs:</i> A PCB determination of ballasts will be made when the ballasts are removed. PCBs may be present in paint.</p> <p><i>SNM Holdup:</i> GBs A-1 and A-2 have been scanned for Pu holdup. While these GBs contain gram quantities of Pu, the holdup does not require remediation prior to decommissioning.</p> <p><i>Radiological Contamination:</i> The GBs are expected to be contaminated > 10⁵ dpm Pu on the inner surfaces. The maximum fixed contamination on the exterior of the GBs is 100,000 dpm. An electrical cabinet in the room is marked as containing fixed contamination. There is fixed contamination beneath the paint on the floor and the building walls from the 1969 fire. It is assumed that floor contamination levels are the same as those after the 1969 fire (i.e., 10⁵ to 10⁶ cpm).</p>	<p><u>Deactivation:</u> Control/fix contamination Remove/package classified material Remove/dispose of loose combustibles Drain/dispose of solutions Remove/dispose of loose equipment Remove/dispose of loose hazardous materials</p> <p><u>Decommissioning:</u> Drain/isolate fluid systems Control radioactive/chemical contamination Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria</p>	<p><i>Radiological Surveys</i></p>	<p>High levels of radiological contamination</p>	<p>PPE Radiological Controls/ ALARA Principles</p>	<p>TRU, TRM, LLW, LLM</p>
30	<p>ROOM SET - Room 442</p> <p><i>Beryllium:</i> Be parts were x-rayed and stored in this area.</p> <p><i>Chemicals:</i> Freon gas will be removed during deactivation.</p> <p><i>Lead & Other Heavy Metals:</i> There is lead metal located in the room. The paint on the floor and walls may contain lead or other RCRA heavy metals. Incandescent lights contain lead and fluorescent lights contain mercury; these lights will be managed as hazardous waste.</p> <p><i>PCBs:</i> A PCB determination of ballasts will be made when the ballasts are removed. PCBs may be present in paint.</p> <p><i>Radiological Contamination:</i> There is no indication of radiological contamination in this room.(surveys).</p>	<p><u>Deactivation:</u> Control/fix contamination Remove/package classified material Remove/dispose of loose combustibles Remove/dispose of loose equipment Remove/dispose of loose hazardous materials</p> <p><u>Decommissioning:</u> Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria</p>	<p><i>Beryllium</i> <i>Radiological Surveys</i></p>	<p>Beryllium</p>	<p>PPE CBDPP</p>	<p>LLW, LLM</p>

SET NO.	SET DESCRIPTION	MAJOR ENDPOINTS	ADDITIONAL CHARACTERIZATION NEEDED	UNIQUE HAZARD ANALYSIS	HAZARD CONTROL	WASTE STREAM
31	<p>ROOM/EQUIPMENT SET - Room 443 (including RCRA Unit 777.1) and NDT Line</p> <p><i>Beryllium:</i> Be parts may have been stored on carts in Room 443.</p> <p><i>Chemicals:</i> A small cylinder of sulfur hexafluoride will be removed during deactivation. Any liquids (i.e., oil or water) in the x-ray unit or GBs will be drained. Carbon tetrachloride has been used in the GBs in the past.</p> <p><i>Lead & Other Heavy Metals:</i> There is lead metal stored in the room and lead shielding within the x-ray unit. There is a thermometer on the X-ray unit that contains mercury. There is lead metal located in the room. The paint on the floor and walls may contain lead or other RCRA heavy metals. Incandescent lights contain lead and fluorescent lights contain mercury; these lights will be managed as hazardous waste.</p> <p><i>PCBs:</i> A PCB determination of ballasts will be made when the ballasts are removed. PCBs may be present in paint.</p> <p><i>SNM Holdup:</i> Not yet determined. The GBs need to be scanned prior to packaging in waste containers, as required by the current criticality controls.</p> <p><i>Radiological Contamination:</i> The GBs are expected to be contaminated >10⁶ dpm Pu on the inner surfaces. There is fixed contamination beneath the paint on the floor and the building walls from the 1969 fire. It is assumed that floor contamination levels are the same as those after the 1969 fire (i.e., >10⁵ cpm).</p>	<p><u>Deactivation:</u> Control/fix contamination Remove/package classified material Remove/dispose of loose combustibles Drain/dispose of solutions Remove/dispose of loose equipment Remove/dispose of loose hazardous materials</p> <p><u>Decommissioning:</u> Drain/isolate fluid systems Control radioactive/chemical contamination Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria</p>	<p><i>Beryllium</i></p> <p><i>SNM Holdup Measurements</i></p> <p><i>Radiological Surveys</i></p>	<p>Beryllium</p> <p>High levels of radiological contamination</p>	<p>PPE</p> <p>CBDPP</p> <p>Radiological Controls/ ALARA Principles</p>	<p>TRU, TRM, LLW, LLM</p>

SET NO.	SET DESCRIPTION	MAJOR ENDPOINTS	ADDITIONAL CHARACTERIZATION NEEDED	UNIQUE HAZARD ANALYSIS	HAZARD CONTROL	WASTE STREAM
32	<p>ROOM SET - Room 436, 444, 446, 447, 448 (RCRA Unit 777.1), 449, and 450</p> <p><i>Asbestos:</i> Rooms 444 and 450 have suspended ceiling with that may be made of asbestos tile.</p> <p><i>Beryllium:</i> Be parts may have been radiographed or stored on carts in Rooms 448 or 449.</p> <p><i>Chemicals:</i> Any liquids (i.e., oil or water) in the x-ray unit, including hydraulics, will be drained. The water in the water walled storage positions and the batteries in Room 448 will be drained after the SNM is removed from the vault during deactivation.</p> <p><i>Lead & Other Heavy Metals:</i> There is lead metal stored in Rooms 447, 448, and 449. There is lead shielding within the cobalt sources in Room 449 and the can storage positions in Room 448. The paint on the floor and walls may contain lead or other RCRA heavy metals. Incandescent lights contain lead and fluorescent lights contain mercury; these lights will be managed as hazardous waste.</p> <p><i>PCBs:</i> A PCB determination of ballasts will be made when the ballasts are removed. PCBs may be present in paint.</p> <p><i>Radioactive Sources:</i> The Cobalt-60 and alpha met sources will be removed during deactivation.</p> <p><i>Radiological Contamination:</i> There is fixed contamination beneath the paint on the floor and the building walls from the 1969 fire. It is assumed that floor contamination levels are the same as those after the 1969 fire (i.e., $10^5 > 10^6$ cpm).</p>	<p><u>Deactivation:</u> Control/fix contamination Remove/package classified material Remove/dispose of loose combustibles Remove/dispose of loose equipment Remove/dispose of loose hazardous materials</p> <p><u>Decommissioning:</u> Drain/isolate/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria</p>	<p><i>Asbestos</i> <i>Beryllium</i> <i>Chemicals</i> <i>Radiological Surveys</i></p>	<p>Beryllium High levels of radiological contamination</p>	<p>PPE Radiological Controls/ ALARA Principles</p>	<p>LLW, LLM</p>

SET NO.	SET DESCRIPTION	MAJOR ENDPOINTS	ADDITIONAL CHARACTERIZATION NEEDED	UNIQUE HAZARD ANALYSIS	HAZARD CONTROL	WASTE STREAM
33	ROOM/EQUIPMENT SET - Room 445 and GBs 494, 495, 499, 500, 501, and 502 <i>Asbestos:</i> A heating mantle will be managed as asbestos waste unless sampling or manufacturer information indicates the material is non-asbestos. <i>Beryllium:</i> Be was welded in the PIGMA welder. Be metal is stored in the cabinet north of the PIGMA welder and in a desk near Room 458. Be parts may have been handled within the environmental test chamber and GBs. <i>Chemicals:</i> Oil from the vacuum pumps and hydraulic units will be removed during deactivation. The refrigerant from an environmental test chamber will be removed prior to decommissioning. The can of magnesium oxide below GBs 494 and 494 will be removed during deactivation. <i>Lead & Other Heavy Metals:</i> There is lead shielding, leaded glass, leaded aprons, and leaded gloves stored in cabinets. The paint on the floor and walls may contain lead or other RCRA heavy metals. Incandescent lights contain lead and fluorescent lights contain mercury; these lights will be managed as hazardous waste. <i>SNM Holdup:</i> GBs 494 and 495 have been scanned for holdup. The holdup in these two GBs does not require remediation prior to GB removal. The other four GBs in the SET need to be scanned. <i>Radiological Contamination:</i> The inside surfaces of the GBs are contaminated with $>10^6$ dpm. There is up to 10,000 dpm of fixed contamination on the exterior of the GBs. There is fixed contamination on a section of bagged ductwork, a downdraft vacuum, and room exhaust ducts. There is fixed contamination beneath the paint on the floor and the building walls from the 1969 fire. It is assumed that floor contamination levels are the same as those after the 1969 fire (i.e., $10^3 > 10^6$ cpm).	Deactivation: Control/fix contamination Remove/package classified material Remove/dispose of loose combustibles Drain/dispose of solutions Remove/dispose of loose equipment Remove/dispose of loose hazardous materials Decommissioning: Drain/isolate fluid systems Control radioactive/chemical contamination Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria	<i>Beryllium</i> <i>Chemicals</i> <i>SNM Holdup Measurements</i> <i>Radiological Surveys</i>	Beryllium High levels of radiological contamination	PPE CBDPP Radiological Controls/ ALARA Principles	TRU, TRM, LLW, LLM

SET NO.	SET DESCRIPTION	MAJOR ENDPOINTS	ADDITIONAL CHARACTERIZATION NEEDED	UNIQUE HAZARD ANALYSIS	HAZARD CONTROL	WASTE STREAM
34	<p>ROOM/EQUIPMENT SET - Room 452 (including Mixed Residue Tank V-022) and Room 475, GBs 022, 027, 029, 034, 035, 522, 548 and associated H-Line</p> <p><i>Beryllium:</i> Pits with Be were disassembled within the inert system. Machining necessary to disassemble the pits would contaminate the inside of the GB with Be.</p> <p><i>Chemicals:</i> Oil from the vacuum pumps and hydraulic units will be removed during deactivation. The can of magnesium oxide in GB 034 will be removed during deactivation.</p> <p><i>Lead & Other Heavy Metals:</i> There is lead shielding, leaded glass, and leaded gloves on the GBs. A mercuric switch contains mercury. The paint on the floor and walls may contain lead or other RCRA heavy metals. Fluorescent lights contain mercury; these lights will be managed as hazardous waste.</p> <p><i>PCBs:</i> A PCB determination of ballasts will be made when the ballasts are removed. PCBs may be present in paint.</p> <p><i>SNM Holdup:</i> Not yet determined.</p> <p><i>Radiological Contamination:</i> The inside surfaces of the GBs are contaminated with $>10^6$ dpm. There is up to 40,000 dpm of fixed contamination on the vacuum pumps and associated motors below the GBs. The contamination beneath the paint on the GBs cannot be measured due to the paint shielding the alpha particles.</p>	<p>Deactivation: Control/fix contamination Remove/package classified material Remove/dispose of loose combustibles Drain/dispose of solutions Remove/dispose of loose equipment Remove/dispose of loose hazardous materials</p> <p>Decommissioning: Drain/isolate fluid systems Control radioactive/chemical contamination Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria</p>	<p><i>Beryllium</i></p> <p><i>Chemicals</i></p> <p><i>SNM Holdup Measurements</i></p> <p><i>Radiological Surveys</i></p>	<p>Beryllium</p> <p>High levels of radiological contamination</p>	<p>PPE</p> <p>CBDPP</p> <p>Radiological Controls/ ALARA Principles</p>	<p>TRU, TRM, LLW, LLM</p>

SET NO.	SET DESCRIPTION	MAJOR ENDPOINTS	ADDITIONAL CHARACTERIZATION NEEDED	UNIQUE HAZARD ANALYSIS	HAZARD CONTROL	WASTE STREAM
35	<p>GLOVEBOX SET - Room 452, GBs 026, 526, 524, 525, 526, 527, 528, 530, 532, 537, 538, 541, and associated H-Line</p> <p><i>Asbestos:</i> The insulation associated with the muffle furnace in GB 523 and the heating chamber in GB 528 may contain asbestos. Manufacturer information or sampling may be used to characterize the insulation.</p> <p><i>Beryllium:</i> Mixed Be/Pu chips were oxidized within the furnace in GB 523. Be parts may have been handled within the environmental test chamber and GBs.</p> <p><i>Chemicals:</i> Oil from the vacuum pumps and hydraulic units will be removed during deactivation. The refrigerant from the environmental test chamber will be removed prior to decommissioning. Containerized chemicals will be removed during deactivation.</p> <p><i>Lead & Other Heavy Metals:</i> There is lead shielding, leaded glass, and leaded gloves on the GBs. There is a lead hammer in GB 537. The geometry tank in GB 524 is lined with cadmium. The parts processed in the GBs were made of or coated with a variety of unspecified metals. Any metal fragments or chips discovered in the GBs will be characterized. The paint on the floor and walls may contain lead or other RCRA heavy metals. Fluorescent lights contain mercury; these lights will be managed as hazardous waste.</p> <p><i>PCBs:</i> A PCB determination of ballasts will be made when the ballasts are removed. PCBs may be present in paint.</p> <p><i>SNM Holdup:</i> Not yet determined.</p> <p><i>Radiological Contamination:</i> The inside surfaces of the GBs are contaminated with $>10^6$ dpm. The downdraft rooms have been surveyed as 1,000,000 dpm fixed + removable inside. There is up to 20,000 dpm fixed contamination on the exterior of the GBs. The contamination beneath the GB paint cannot be measured due to the paint shielding the alpha particles. The cylinders extending into the raschig ring filled pit beneath GB 528 are Pu contaminated. Depleted and enriched U contamination is possible in these GBs. Tritium releases occurred in GB 532 in the 1960s and 1970s. Parts exposed to radiation blasts at NTS were disassembled in the GBs. Residual activation or fission product contamination will need to be addressed.</p>	<p>Deactivation: Control/fix contamination Remove/package classified material Remove/dispose of loose combustibles Drain/dispose of solutions Remove/dispose of loose equipment Remove/dispose of loose hazardous materials</p> <p>Decommissioning: Drain/isolate fluid systems Control radioactive/chemical contamination Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria</p>	<p><i>Asbestos</i> <i>Beryllium</i> <i>Chemicals</i> <i>SNM Holdup Measurements</i> <i>Radiological Surveys</i></p>	<p>Beryllium High levels of radiological contamination Tritium Activation products Fission products</p>	<p>PPE CBDPP Radiological Controls/ ALARA Principles</p>	<p>TRU, TRM, LLW, LLM</p>

SET NO.	SET DESCRIPTION	MAJOR ENDPOINTS	ADDITIONAL CHARACTERIZATION NEEDED	UNIQUE HAZARD ANALYSIS	HAZARD CONTROL	WASTE STREAM
36	<p>ROOM/EQUIPMENT SET - Room 452 (including Mixed Residue Tank V-543) and Room 475 with GBs 536, 544, and 543 and machining equipment</p> <p><i>Asbestos:</i> The high temperature gloves and heating mantles will be managed as asbestos waste unless sampling or manufacturer information indicates these are non-asbestos.</p> <p><i>Beryllium:</i> Be was machined in GB 543. Historical Be surveys confirm the presence of Be contamination near this GB. The argon system in the mezzanine is potentially contaminated internally with Be.</p> <p><i>Chemicals:</i> Oil from the vacuum pumps and hydraulic units will be removed during deactivation. The can of magnesium oxide will be removed during deactivation. The oxygen getter is identified as Dow Q1. This material needs to be characterized. The desiccant is a zeolite.</p> <p><i>Lead & Other Heavy Metals:</i> There are lead vise covers, lead bricks and lead hammers in the rooms. There is lead tape and leaded glove covers stored in the cabinets. Paint on walls and floors may contain lead and other heavy metals.</p> <p><i>PCBs:</i> A PCB determination of ballasts will be made when the ballasts are removed. PCBs may be present in paint.</p> <p><i>SNM Holdup:</i> The columns for the gettering material and desiccant will be scanned for holdup.</p> <p><i>Radiological Contamination:</i> There is up to 10,000 dpm of fixed contamination on the hoods, table, and room exhaust duct. In the early 1960s, a contamination incident from a coating machine dispersed Pu and gold contamination throughout Room 452. The contamination from this incident is in the range of the fire contamination.</p>	<p><u>Deactivation:</u> Control/fix contamination Remove/package classified material Remove/dispose of loose combustibles Drain/dispose of solutions Remove/dispose of loose equipment Remove/dispose of loose hazardous materials</p> <p><u>Decommissioning:</u> Drain/isolate fluid systems Control radioactive/chemical contamination Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria</p>	<p><i>Beryllium</i></p> <p><i>Chemicals</i></p> <p><i>SNM Holdup Measurements</i></p> <p><i>Radiological Surveys</i></p>	<p>Beryllium</p> <p>High levels of radiological contamination</p>	<p>PPE</p> <p>CBDPP</p> <p>Radiological Controls/ALARA Principles</p>	<p>LLW, LLM</p>

SET NO.	SET DESCRIPTION	MAJOR HAZARD ENDPOINTS	ADDITIONAL CHARACTERIZATION NEEDED	UNIQUE HAZARD ANALYSIS	HAZARD CONTROL	WASTE STREAM
37	<p>ROOM SET - Rooms 453, 454, 460, and part of Room 445 (south end)</p> <p><i>Beryllium:</i> Be metal samples were found in Room 453. Be parts may have been handled within the testing equipment. Surface surveys will be performed prior to initiating decommissioning activities.</p> <p><i>Chemicals:</i> Oil from the compressors and hydraulic units will be removed during deactivation. The refrigerant from the environmental test chamber will be removed prior to decommissioning.</p> <p><i>Lead & Other Heavy Metals:</i> The paint on the floor, walls and accelerators may contain lead or other RCRA heavy metals. Fluorescent lights contain mercury; these lights will be managed as hazardous waste. The room thermostats may contain mercury. Some of the internal parts of the horizontal accelerator are cadmium plated.</p> <p><i>PCBs:</i> A PCB determination of ballasts will be made when the ballasts are removed. PCBs may be present in paint.</p> <p><i>Radiological Contamination:</i> There is fixed contamination on the exterior of the horizontal accelerator including the sandbags. The contamination beneath the paint on the accelerator can not be measured due to the paint shielding the alpha particles. There is fixed contamination beneath the paint on the floor and the building walls from the 1969 fire. It is assumed that floor contamination levels are the same as those after the 1969 fire (i.e., 10^3 - $>10^6$ cpm).</p>	<p><u>Deactivation:</u> Control/fix contamination Remove/dispose of loose combustibles Drain/dispose of solutions Remove/dispose of loose equipment Remove/dispose of loose hazardous materials</p> <p><u>Decommissioning:</u> Drain/isolate fluid systems Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria</p>	<p><i>Beryllium</i></p> <p><i>Chemicals</i></p> <p><i>SWM Holdup Measurements</i></p> <p><i>Radiological Surveys</i></p>	<p>Beryllium</p> <p>High levels of radiological contamination</p>	<p>PPE</p> <p>CBDPP</p> <p>Radiological Controls/ ALARA Principles</p>	<p>LLW, LLM</p>

SET NO.	SET DESCRIPTION	MAJOR ENDPOINTS	ADDITIONAL CHARACTERIZATION NEEDED	UNIQUE HAZARD ANALYSIS	HAZARD CONTROL	WASTE STREAM
38	<p>ROOM SET - Rooms 301, 302, 455, 456, 457, 458, and 481</p> <p><i>Asbestos:</i> The floor tile in Rooms 302 and 302 may contain asbestos.</p> <p><i>Beryllium:</i> The tool cutter in Room 461 is marked as Be contaminated. Be metal parts were handled in Rooms 455 and 457.</p> <p><i>Chemicals:</i> Oil in the equipment will be drained during deactivation. The containerized chemicals (salt, calcium sulfate) in Room 458 will be removed during deactivation.</p> <p><i>Lead & Other Heavy Metals:</i> There is lead glass in Room 457. There are printed circuit boards and a lead apron in Room 458. Lead scrap, lead security seals, and a lead-shielded cart are contained in this SET. The paint on the floor and walls may contain lead or other RCRA heavy metals. Incandescent lights contain lead and fluorescent lights contain mercury; these lights will be managed as hazardous waste.</p> <p><i>PCBs:</i> A PCB determination of ballasts will be made when the ballasts are removed. PCBs may be present in paint. The switchgear will be inspected for PCB capacitors when it is removed. An obsolete power supply in Room 302 will be inspected for PCB fluid when it is removed.</p> <p><i>Radiological Contamination:</i> There is fixed contamination in and on the equipment in Rooms 302 (power supply, surface plate) and 455 (pumpdown table, hood). There is fixed contamination on bagged tools within cabinets in several of the rooms. There is fixed contamination beneath the paint on the floor and the building walls from the 1969 fire. It is assumed that floor contamination levels are the same as those after the 1969 fire (i.e., $10^3 - 10^6$ cpm).</p>	<p><u>Deactivation:</u></p> <p>Control/fix contamination</p> <p>Remove/dispose of loose combustibles</p> <p>Remove/dispose of loose equipment</p> <p>Remove/dispose of loose hazardous materials</p> <p><u>Decommissioning:</u></p> <p>Drain/isolate/remove/dispose of utility systems</p> <p>Remove/dispose of equipment & associated piping/conduit</p> <p>Package to waste acceptance criteria</p>	<p><i>Asbestos</i></p> <p><i>Chemicals</i></p> <p><i>Beryllium</i></p> <p><i>Radiological Surveys</i></p>	<p>Beryllium</p> <p>High levels of radiological contamination</p>	<p>PPE</p> <p>CBDPP</p> <p>Radiological Controls/ALARA Principles</p>	<p>LLW, LLM</p>

Building 777 Closure Project
Decommissioning Operations Plan

Revision 0
October 18, 1999

SET NO.	SET DESCRIPTION	MAJOR ENDPOINTS	ADDITIONAL CHARACTERIZATION NEEDED	UNIQUE HAZARD ANALYSIS	HAZARD CONTROL	WASTE STREAM
39	<p>ROOM SET - Rooms 459 and 459A</p> <p><i>Beryllium:</i> Be metal parts may have been pressure tested in Room 459A.</p> <p><i>Chemicals:</i> Oil or other liquids in the equipment will be removed during deactivation. The container of water in Room 459 will be removed during deactivation.</p> <p><i>Lead & Other Heavy Metals:</i> There is lead metal and circuit boards in Room 459. There is a mercury switch in this SET. The paint on the floor and walls may contain lead or other RCRA heavy metals. Incandescent lights contain lead and fluorescent lights contain mercury; these lights will be managed as hazardous waste.</p> <p><i>PCBs:</i> A PCB determination of ballasts will be made when the ballasts are removed. PCBs may be present in paint. The InductoTherm furnace contains capacitors filled with Pydraul dielectric fluid.</p> <p><i>Radiological Contamination:</i> There is 2,400 dpm fixed contamination on a room exhaust duct. Depleted U contamination is possible in the pressure test units. There is fixed contamination beneath the paint on the floor and the building walls from the 1969 fire. It is assumed that floor contamination levels are the same as those after the 1969 fire (i.e., $10^3 - 10^6$ cpm).</p>	<p><u>Deactivation:</u> Control/fix contamination Remove/dispose of loose combustibles Remove/dispose of loose equipment Remove/dispose of loose hazardous materials</p> <p><u>Decommissioning:</u> Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria</p>	<p><i>Beryllium</i> <i>Chemicals</i> <i>Radiological Surveys</i></p>	<p>Beryllium High levels of radiological contamination</p>	<p>PPE CBDPP Radiological Controls/ ALARA Principles</p>	<p>LLW, LLM</p>
40	<p>ROOM SET - Room 462, "A" Vault</p> <p><i>Beryllium:</i> Be metal parts have been stored on carts or in shipping containers in Room 462.</p> <p><i>Chemicals:</i> Tubes of vacuum grease, sealant and containers of cleaning supplies will be removed during deactivation.</p> <p><i>Lead & Other Heavy Metals:</i> There is lead metal, leaded glass and leaded aprons stored in Room 462. There is lead shielding on the benelex wall. The paint on the floor and walls may contain lead or other RCRA heavy metals. The room thermostat may contain mercury. Fluorescent light fixtures contain mercury and will be managed as RCRA hazardous waste.</p> <p><i>PCBs:</i> A PCB determination of ballasts will be made when the ballasts are removed. PCBs may be present in paint.</p> <p><i>SVM Holdup:</i> The SNM in the vault is stored with containment (i.e. metal can, plastic bags, within a pit) at all times. Therefore, holdup is not an issue.</p> <p><i>Radiological Contamination:</i> The map of floor contamination levels after the 1969 fire indicates contamination from the fire did not spread to the vault.</p>	<p><u>Deactivation:</u> Control/fix contamination Remove/package classified material Remove/dispose of loose combustibles Remove/dispose of loose equipment Remove/dispose of loose hazardous materials</p> <p><u>Decommissioning:</u> Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria</p>	<p><i>Beryllium</i> <i>Radiological Surveys</i></p>	<p>Beryllium</p>	<p>PPE CBDPP</p>	<p>LLW, LLM</p>

SET NO.	SET DESCRIPTION	MAJOR ENDPOINTS	ADDITIONAL CHARACTERIZATION NEEDED	UNIQUE HAZARD ANALYSIS	HAZARD CONTROL	WASTE STREAM
41	<p>ROOM/EQUIPMENT SET - Room 463 and GBs A4, A5, A6, A7, A8, A9, and A11</p> <p><i>Beryllium:</i> Leak detector parts stored in the room have manufacturer warning regarding Be in the ceramic rings. There are Be metal discs stored in one of the cabinets. The north end of the room was once part of Room 464, which contained furnaces to "bake out" Be parts.</p> <p><i>Chemicals:</i> Ethanol and Freon TF were used as solvents in these GBs. All liquids will be drained prior to decommissioning activities. Containerized chemicals will be removed during deactivation.</p> <p><i>Lead & Other Heavy Metals:</i> There is lead shielding and leaded gloves on GBs. Leaded GB covers gloves, printed circuit boards with lead solder, and leaded aprons are stored in cabinets. Leaded glass on the GBs contains regulated quantities of barium and lead. The vacuum pump connected to GB A-7 is assumed to contain mercury until the pump liquid can be verified to be mercury or oil.</p> <p><i>PCBs:</i> A PCB determination of ballasts will be made when the ballasts are removed. PCBs may be present in paint.</p> <p><i>SWM Holdup:</i> GBs A-4, -5 and -11 have been scanned for Pu holdup. The Pu in these GBs does not require remediation prior to decommissioning. While enriched U was handled in these GBs, measurable U holdup has not been detected to date.</p> <p><i>Radiological Contamination:</i> The GBs are expected to be contaminated $>10^6$ dpm Pu on the inner surfaces. The maximum fixed contamination on the exterior of the GBs is 600,000 dpm. There is fixed contamination beneath the paint on the floor and building walls from the 1969 fire. It is assumed that the floor contamination levels are the same as those after the 1969 fire (i.e., $10^3 - 10^4$ cpm). An electrical cabinet in the room is marked as containing fixed contamination.</p>	<p><u>Deactivation:</u></p> <ul style="list-style-type: none"> Control/fix contamination Remove/package classified material Remove/dispose of loose combustibles Drain/dispose of solutions Remove/dispose of loose equipment Remove/dispose of loose hazardous materials <p><u>Decommissioning:</u></p> <ul style="list-style-type: none"> Drain/isolate fluid systems Control radioactive/chemical contamination Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria 	<p><i>Beryllium</i></p> <p><i>Chemicals</i></p> <p><i>SWM Holdup Measurement</i></p> <p><i>Radiological Surveys</i></p>	<p>Beryllium</p> <p>High levels of radiological contamination</p>	<p>PPE</p> <p>CBDPP</p> <p>Radiological Controls/ALARA</p>	<p>TRU, TRM, LLW, LLM</p>

SET NO.	SET DESCRIPTION	MAJOR ENDPOINTS	ADDITIONAL CHARACTERIZATION NEEDED	UNIQUE HAZARD ANALYSIS	HAZARD CONTROL	WASTE STREAM
42	<p>ROOM SET - Rooms 464, 477, 477A, 463A, and 463B</p> <p><i>Asbestos:</i> The insulation on the water pipes in Room 463B is visually identified as fiberglass insulation (confirm as non-asbestos). The floor tile in Rooms 477 and 477A may contain asbestos.</p> <p><i>Beryllium:</i> Be parts were baked to remove moisture in Room 464 during the 1960s.</p> <p><i>Chemicals:</i> Water from process tank in Room 463B will be drained during deactivation. The refrigerant and oil from the air conditioner in Room 464 will be removed during deactivation.</p> <p><i>Lead & Other Heavy Metals:</i> The paint on the floor and walls may contain lead or other RCRA heavy metals. Incandescent lights contain lead and fluorescent light fixtures contain mercury.</p> <p><i>PCBs:</i> A PCB determination of ballasts will be made when the ballasts are removed. PCBs may be present in paint.</p> <p><i>Radiological Sources:</i> The alphameter sources in Room 463A will be removed during deactivation.</p> <p><i>Radiological Contamination:</i> There is fixed contamination beneath the paint on the floor and building walls from the 1969 fire. It is assumed that the floor contamination levels are the same as those after the 1969 fire (i.e., $10^3 - 10^5$ cpm).</p>	<p>Deactivation: Control/fix contamination Remove/package classified material Remove/dispose of loose combustibles Drain/dispose of solutions Remove/dispose of loose equipment Remove/dispose of loose hazardous materials</p> <p>Decommissioning: Drain/isolate fluid systems Remove/isolate/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria</p>	<p><i>Asbestos</i> <i>Beryllium</i> <i>Liquids</i> <i>Chemicals</i> <i>Radiological Surveys</i></p>	<p>Beryllium High levels of radiological contamination</p>	<p>PPE CBDPP Radiological Controls/ ALARA Principles</p>	<p>LLW, LLM</p>
43	<p>ROOM SET - Rooms 465, 465A, and the north end of Room 445</p> <p><i>Beryllium:</i> Be parts were stored in packages in Room 465. At least one pressure cooker in Room 465 is marked as internally contaminated with Be. There is Be contaminated equipment in Room 445 in SET 33, which is south of SET 43.</p> <p><i>Chemicals:</i> Containerized chemicals (Bonami, I, I, I-trichloroethane, oil, Oakite, water) in and near the two hoods in Room 445 will be removed during deactivation.</p> <p><i>Lead & Other Heavy Metals:</i> There are printed circuit boards with lead solder, lead-taped vials, lead bricks, and leaded aprons in this SET. The paint on the floor and walls may contain lead or other RCRA heavy metals. Fluorescent light fixtures contain mercury and will be managed as RCRA hazardous waste. Thermostats in the room may contain mercury.</p> <p><i>PCBs:</i> A PCB determination of ballasts will be made when the ballasts are removed. PCBs may be present in paint.</p> <p><i>Radioactive Sources:</i> The combo source will be removed during deactivation.</p> <p><i>Radiological Contamination:</i> Fixed contamination exists within the used pressure cookers in Room 465A. There is fixed contamination beneath the paint on the floor and building walls from the 1969 fire. It is assumed that the floor contamination levels are the same as those after the 1969 fire (i.e., $10^3 - >10^6$ cpm).</p>	<p>Deactivation: Control/fix contamination Remove/dispose of loose combustibles Remove/dispose of loose equipment Remove/dispose of loose hazardous materials</p> <p>Decommissioning: Drain/isolate utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria</p>	<p><i>Beryllium</i> <i>Radiological Surveys</i></p>	<p>Beryllium High levels of radiological contamination</p>	<p>PPE CBDPP Radiological Controls/ ALARA Principles</p>	<p>LLW, LLM</p>

SET NO.	SET DESCRIPTION	MAJOR ENDPOINTS	ADDITIONAL CHARACTERIZATION NEEDED	UNIQUE HAZARD ANALYSIS	HAZARD CONTROL	WASTE STREAM
44	<p>ROOM SET - Rooms 466, 467, 468, 469, 470, 471, 472, 474, and 474D</p> <p><i>Beryllium:</i> Be parts were moved on carts through the hallway and radiographed in Room 471. Be windows were used to filter out low energy X-rays on the low keV in Room 471.</p> <p><i>Chemicals:</i> Any liquids (i.e. oil or water) will be drained from equipment during deactivation. Containers of oil and Freon will be removed during deactivation.</p> <p><i>Lead & Other Heavy Metals:</i> Pieces of lead metal are stored in Room 471. There is lead shielding on the sources and in the door to Room 471. There are leaded gloves and lead shielding on the GB in Room 472. The radiography film in Room 474D may contain regulated quantities of heavy metals such as cadmium based on information from Kodak. Equipment that contacted the fixer solution will be contaminated with silver. The paint on the floor and walls may contain lead or other RCRA heavy metals. Incandescent lights may contain lead and fluorescent light fixtures contain mercury. These lights will be managed as RCRA hazardous waste.</p> <p><i>PCBs:</i> A PCB determination of ballasts will be made when the ballasts are removed. PCBs may be present in paint.</p> <p><i>SNM Holdup:</i> It has not yet been determined if the GB and tank in Room 472 contain holdup.</p> <p><i>Radioactive Sources:</i> The sources in Room 471 will be removed during deactivation, including the depleted U pig used for shielding.</p> <p><i>Radiological Contamination:</i> The GBs are expected to be contaminated > 10⁶ dpm Pu on the inner surfaces. There is fixed contamination beneath the paint on the floor and building walls from the 1969 fire. It is assumed that the floor contamination levels are the same as those after the 1969 fire (i.e., 10³ - 10⁵ cpm).</p>	<p><u>Deactivation:</u></p> <ul style="list-style-type: none"> Control/fix contamination Remove/package classified material Remove/dispose of loose combustibles Remove/dispose of loose equipment Remove/dispose of loose hazardous materials <p><u>Decommissioning:</u></p> <ul style="list-style-type: none"> Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria 	<p><i>Beryllium</i></p> <p><i>Chemicals</i></p> <p><i>SNM Holdup Measurement</i></p> <p><i>Radiological Surveys</i></p>	<p>Beryllium</p> <p>High levels of radiological contamination</p>	<p>PPE</p> <p>CBDPP</p> <p>Radiological Controls/ALARA Principles</p>	<p>TRU, TRM, LLW, LLM</p>

SET NO.	SET DESCRIPTION	MAJOR ENDPOINTS	ADDITIONAL CHARACTERIZATION NEEDED	UNIQUE HAZARD ANALYSIS	HAZARD CONTROL	WASTE STREAM
45	<p>ROOM SET - Rooms 473 and 476</p> <p><i>Beryllium:</i> Be parts may have been radiographed and stored on carts in Room 473.</p> <p><i>Chemicals:</i> Sulfur hexafluoride is an insulating gas within the x-ray device. Any liquids (i.e., oil or water) in the x-ray unit will be drained.</p> <p><i>Lead & Other Heavy Metals:</i> There are leaded gloves and pieces of lead metal stored in the room. The door to Room 473 and the storage rack doors in Room 476 contain lead metal. There is lead shielding within the x-ray unit and on the floor. The paint on the floor and walls may contain lead or other RCRA heavy metals. Incandescent lights contain lead and fluorescent light fixtures contain mercury. These lights will be managed as RCRA hazardous waste.</p> <p><i>PCBs:</i> A PCB determination of ballasts will be made when the ballasts are removed. PCBs may be present in paint.</p> <p><i>Radioactive Sources:</i> The gamma alarm and radiography sources will be removed during deactivation.</p> <p><i>Radiological Contamination:</i> Fixed contamination exists within the x-ray unit. There is fixed contamination beneath the paint on the floor and building walls from the 1969 fire. It is assumed that the floor contamination levels are the same as those after the 1969 fire (i.e., $10^1 - 10^4$ cpm).</p>	<p><u>Deactivation:</u> Control/fix contamination Remove/dispose of loose combustibles Remove/dispose of loose equipment Remove/dispose of loose hazardous materials</p> <p><u>Decommissioning:</u> Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria</p>	<p><i>Beryllium</i> <i>Chemicals</i> <i>Radiological Surveys</i></p>	Beryllium	PPE CBDPP	LLW, LLM
46	<p>ROOM SET - Room 478, "B" Vault</p> <p><i>Beryllium:</i> Be metal parts have been stored on carts or shelves in Room 478.</p> <p><i>Lead & Other Heavy Metals:</i> The paint on the floor and walls may contain lead or other RCRA heavy metals. Fluorescent light fixtures contain mercury. These lights will be managed as RCRA hazardous waste.</p> <p><i>PCBs:</i> A PCB determination of ballasts will be made when the ballasts are removed. PCBs may be present in paint.</p> <p><i>Radiological Contamination:</i> There is fixed contamination beneath the paint on the floor and building walls from the 1969 fire. It is assumed that the floor contamination levels are the same as those after the 1969 fire (i.e., $10^1 - 10^4$ cpm).</p>	<p><u>Deactivation:</u> Control/fix contamination Remove/package classified material Remove/dispose of loose combustibles Remove/dispose of loose equipment Remove/dispose of loose hazardous materials</p> <p><u>Decommissioning:</u> Drain/isolate fluid systems Control radioactive/chemical contamination Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria</p>	<p><i>Beryllium</i> <i>Chemicals</i> <i>Radiological Surveys</i></p>	Beryllium	PPE CBDPP	LLW, LLM

SET NO.	SET DESCRIPTION	MAJOR ENDPOINTS	ADDITIONAL CHARACTERIZATION NEEDED	UNIQUE HAZARD ANALYSIS	HAZARD CONTROL	WASTE STREAM
47	<p>ROOM SET - Rooms 479, 481, 482, 483, 483A, and 483B (including RCRA Unit 777.1 [i.e., Rm. 483, Area 8])</p> <p><i>Beryllium:</i> Be parts are stored in Room 483A. Be parts may have been stored or moved through other rooms in this SET.</p> <p><i>Chemicals:</i> Containerized chemicals near the forklift charging station (water, sodium bicarbonate, and magnesium oxide) will be removed during deactivation.</p> <p><i>Lead & Other Heavy Metals:</i> There is lead shielding from shipping containers and lead bricks stored in Room 482. Leaded aprons are stored in Room 481. Room thermostats may contain mercury. The paint on the floor and walls may contain lead or other RCRA heavy metals. Fluorescent light fixtures contain mercury. These lights will be managed as RCRA hazardous waste.</p> <p><i>PCBs:</i> A PCB determination of ballasts will be made when the ballasts are removed. PCBs may be present in paint.</p> <p><i>Radioactive Sources:</i> The source on the combo monitor in Room 481 will be removed during deactivation.</p> <p><i>Radiological Contamination:</i> The depleted U parts stored in Room 483A will be removed during deactivation. There is fixed contamination beneath the paint on the floor and building walls from the 1969 fire. It is assumed that the floor contamination levels are the same as those after the 1969 fire (i.e., $10^3 - 10^5$ cpm).</p>	<p>Deactivation: Control/fix contamination Remove/package classified material Remove/dispose of loose combustibles Remove/dispose of loose equipment Remove/dispose of loose hazardous materials</p> <p>Decommissioning: Drain/isolate utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria</p>	<p><i>Beryllium</i> <i>Radiological Surveys</i></p>	Beryllium	PPE CBDPP	LLW, LLM

SET NO.	SET DESCRIPTION	MAJOR ENDPOINTS	ADDITIONAL CHARACTERIZATION NEEDED	UNIQUE HAZARD ANALYSIS	HAZARD CONTROL	WASTE STREAM
48	<p>EQUIPMENT SET - Kathabar System (except inside plenums)</p> <p><i>Asbestos:</i> The insulation on the Kathabar K-1 is listed in the asbestos inventory. Insulation on the remaining units will be managed as asbestos.</p> <p><i>Chemicals:</i> The brine in the units will not be drained until decommissioning because cooling of the air is needed to keep the building temperatures comfortable.</p> <p><i>Lead & Other Heavy Metals:</i> Kathene sludge has been analyzed and shown to contain regulated amounts of cadmium, chromium and lead.</p> <p><i>Radiological Contamination:</i> There is no known radiological contamination of the Kathabar units except for the GBDA Kathabar (SET 72). Since the equipment is not completely surveyable, the equipment will be disposed of as radiologically contaminated.</p>	<p><u>Deactivation:</u></p> <p>Control/fix contamination</p> <p>Remove/dispose of loose combustibles</p> <p>Drain/dispose of solutions</p> <p>Remove/dispose of loose hazardous materials</p> <p><u>Decommissioning:</u></p> <p>Drain/isolate/remove/dispose of utility systems</p> <p>Remove/dispose of equipment & associated piping/conduit</p> <p>Package to waste acceptance criteria</p>	<p><i>Beryllium</i></p> <p><i>Chemicals</i></p>	<p>Cadmium</p> <p>Chromium</p>	PPE	LLW, LLM

SET NO.	SET DESCRIPTION	MAJOR ENDPOINTS	ADDITIONAL CHARACTERIZATION NEEDED	UNIQUE HAZARD ANALYSIS	HAZARD CONTROL	WASTE STREAM
49	<p>ROOM SET - Modulab</p> <p><i>Asbestos:</i> The gloves used for handling thermally hot samples will be managed as asbestos waste.</p> <p><i>Beryllium:</i> The lapping machine in the Modulab is marked as Be contaminated. There is a portion of a Be ingot and other pieces of Be stored in a cabinet. Be has been detected on smears taken from the Modulab.</p> <p><i>Chemicals:</i> The column of diertite (calcium sulfate) will be removed during deactivation. Ethanol and varsol were used as solvents in the lapping process. Oil from the hydraulic systems and vacuum pumps will be drained during deactivation.</p> <p><i>Lead & Other Heavy Metals:</i> Lead metal is located in cabinet drawers.</p> <p><i>PCBs:</i> The InductoTherm furnace contains capacitors filled with Pydraul dielectric fluid. A PCB determination of ballasts will be made when the ballasts are removed.</p> <p><i>Radiological Contamination:</i> There are depleted U metal samples in the Modulab. Some of the equipment may be contaminated with depleted U. According to OSAs for the processes, Pu was no processed in the Modulab. Based on the contamination map form the 1969 fire, the Modulab was not internally contaminated.</p>	<p>Deactivation: Control/fix contamination Remove/dispose of loose combustibles Remove/dispose of loose equipment Remove/dispose of loose hazardous materials</p> <p>Decommissioning: Drain/isolate utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria</p>	<p><i>Beryllium</i> <i>Chemicals</i> <i>Radiological Surveys</i></p>	Beryllium	<p>PPE</p> <p>CBDPP</p>	LLW, LLM

SET NO.	SET DESCRIPTION	MAJOR ENDPOINTS	ADDITIONAL CHARACTERIZATION NEEDED	UNIQUE HAZARD ANALYSIS	HAZARD CONTROL	WASTE STREAM
50	<p>ROOM SET - Rooms 101, 102, 103, 103A, 104, 104A, 104B, 104C, 104E, 106A, 106D, 107, 107D, 107E, 108, 108A, 108B, 108C, 109, 109A, 109C, 109D, 110, 112, 112A, 112B, 113, 113B, 113C, 114, 116B, 117, 119, 120, 121, 129, 140, and 149</p> <p><i>Asbestos:</i> May be present in floor tiles.</p> <p><i>Chemicals:</i> Cleaning supplies in this SET will be removed prior to decommissioning.</p> <p><i>Lead & Other Heavy Metals:</i> The paint on the floor and walls may contain lead or other RCRA heavy metals.</p> <p><i>PCBs:</i> A PCB determination of ballasts will be made when the ballasts are removed. PCBs may be present in paint.</p> <p><i>Radioactive Sources:</i> Sources will be removed prior to decommissioning.</p> <p><i>Radiological Contamination:</i> There is fixed contamination beneath the paint and floor tile. It is assumed that contamination levels are the same as those after the 1969 fire (i.e., 250 - 10⁶ cpm). The offices were extensively decontaminated after the fire; however, contamination has been discovered when floor tile has been removed. Small amounts of contamination have been discovered in a light fixture in Room 129.</p>	<p>Deactivation: Control/fix contamination Remove/package classified material Remove/dispose of loose combustibles Remove/dispose of loose equipment Remove/dispose of loose hazardous materials</p> <p><u>Decommissioning:</u> Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria</p>	<p><i>Asbestos</i> <i>Radiological Surveys</i></p>	<p>High levels of radiological contamination</p>	<p>PPE Radiological Controls/ ALARA Principles</p>	<p>LLW, SAN</p>

SET NO.	SET DESCRIPTION	MAJOR ENDPOINTS	ADDITIONAL CHARACTERIZATION NEEDED	UNIQUE HAZARD ANALYSIS	HAZARD CONTROL	WASTE STREAM
51	<p>GLOVEROX SET - GBs in Room 154A: 046, 494 (cold box adjacent to GB 495), 495, 496, 499, 501, 502, 503, 505, 506, and 507</p> <p><i>Chemicals:</i> Freon refrigerant was used to cool the furnaces. Water from the water wall shielding and oil from the vacuum pumps will be drained during deactivation.</p> <p><i>Lead & Other Heavy Metals:</i> There is lead shielding and leaded gloves on the GBs. Leaded glass contains regulated quantities of lead and barium. The paint on the floor and walls may contain lead or other RCRA heavy metals.</p> <p><i>PCBs:</i> A PCB determination of ballasts will be made when the ballasts are removed. PCBs may be present in paint.</p> <p><i>SNM Holdup:</i> GBs 495, 496, 501 and 502 contain significant Pu holdup, which will be remediated to safeguards termination limits prior to decommissioning. No measurable U holdup has been detected.</p> <p><i>Radiological Contamination:</i> The GBs are expected to be contaminated >10⁴ dpm Pu on the inner surfaces. The fixed contamination on the exterior of the GBs ranges from 10,000 dpm to 1,000,000 dpm. Americium contamination in GBs 046, 499, 501, 502 and 503 contain greater than 1000 ppm Am in the Pu.</p>	<p><u>Deactivation:</u> Control/fix contamination Remove/package classified material Remove/dispose of loose combustibles Drain/dispose of solutions Remove/dispose of loose equipment Remove/dispose of loose hazardous materials</p> <p><u>Decommissioning:</u> Drain/isolate/dispose of fluid systems Control radioactive/chemical contamination Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria</p>	<p><i>Chemicals</i> <i>SNM Holdup easement</i> <i>Radiological Surveys</i></p>	<p>High levels of radiological contamination</p>	<p>PPE Radiological Controls/ ALARA Principles</p>	<p>TRU, TRM, LLW, LLM</p>
52	<p>EQUIPMENT SET - Tanks T-360 (RCRA Unit 94.007) and T-370 (RCRA Unit 94.008), plus GBs 361 and 371 and Bermed Area</p> <p><i>Beryllium:</i> There is no record of Be processing in this area. Surface surveys will be performed to verify there is no contamination.</p> <p><i>Chemicals:</i> Any liquids in the tanks will be drained during deactivation.</p> <p><i>Lead & Other Heavy Metals:</i> There are leaded gloves on the filter GBs.</p> <p><i>PCBs:</i> A PCB determination of ballasts will be made when the ballasts are removed.</p> <p><i>SNM Holdup:</i> Not yet determined for the tanks and GBs. The tanks and the GBs will need to be "gram estimated" prior to removal to comply with the current criticality control requirements for waste boxes.</p> <p><i>Radiological Contamination:</i> The tanks and GBs may or may not be contaminated inside. Radiological surveys are needed.</p>	<p><u>Deactivation:</u> Control/fix contamination Remove/package classified material Remove/dispose of loose combustibles Drain/dispose of solutions Remove/dispose of loose equipment Remove/dispose of loose hazardous materials</p> <p><u>Decommissioning:</u> Drain/isolate fluid systems Control radioactive/chemical contamination Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria</p>	<p><i>Beryllium</i> <i>Chemicals</i> <i>SNM Holdup Measurement</i> <i>Radiological Surveys</i></p>	<p>None</p>	<p>PPE</p>	<p>LLW, LLM</p>

SET NO.	SET DESCRIPTION	MAJOR ENDPOINTS	ADDITIONAL CHARACTERIZATION NEEDED	UNIQUE HAZARD ANALYSIS	HAZARD CONTROL	WASTE STREAM
53	<p>ROOM SET - Room 152 Vault (RCRA Unit 90.85)</p> <p><i>Beryllium:</i> The criticality limits did not allow the storage of Be. Surface surveys will be performed prior to initiating decommissioning to confirm there is no Be contamination.</p> <p><i>Chemicals:</i> The water in the water walled storage will be drained during deactivation.</p> <p><i>Lead & Other Heavy Metals:</i> There is lead shielding on the can storage positions in Room 448. The paint on the floor and walls may contain lead or other RCRA heavy metals. Incandescent lights contain lead and fluorescent light fixtures contain mercury. These lights will be managed as RCRA hazardous waste.</p> <p><i>PCBs:</i> A PCB determination of ballasts will be made when the ballasts are removed. PCBs may be present in paint.</p> <p><i>Radiological Contamination:</i> There is fixed contamination beneath the paint on the floor and building walls from the 1969 fire. It is assumed that the floor contamination levels are the same as those after the 1969 fire (i.e., $>10^5$ cpm).</p>	<p><u>Deactivation:</u> Control/fix contamination Remove/package classified material Remove/dispose of loose combustibles Remove/dispose of loose equipment Remove/dispose of loose hazardous materials</p> <p><u>Decommissioning:</u> Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria</p>	<p><i>Beryllium</i> <i>Chemicals</i> <i>Radiological Surveys</i></p>	<p>High levels of radiological contamination</p>	<p>PPE Radiological Controls/ ALARA Principles</p>	<p>LLW, LLM</p>
54	<p>ROOM SET - Rooms 153, 154 (RCRA Unit 776.1), 154B, 155, and 161B</p> <p><i>Asbestos:</i> The insulation on the condensate tank will be managed as asbestos waste unless sample results indicate the insulation is non-asbestos.</p> <p><i>Beryllium:</i> Pits with Be parts were processes in the autoclaves in Room 153 during the 1960s.</p> <p><i>Chemicals:</i> There are lead acid batteries and tubes of adhesive that will be removed during deactivation. The tanks and vacuum pumps will be drained during deactivation.</p> <p><i>Lead & Other Heavy Metals:</i> Printed circuit boards contain lead. The room thermostat may contain mercury. The paint on the floor and walls may contain lead or other RCRA heavy metals. Incandescent lights contain lead and fluorescent light fixtures contain mercury. These lights will be managed as RCRA hazardous waste.</p> <p><i>PCBs:</i> A PCB determination of ballasts will be made when the ballasts are removed. PCBs may be present in paint.</p> <p><i>SNM Holdup:</i> The SNM processed in the autoclaves was self-contained; therefore, holdup is not possible in the autoclave pit.</p> <p><i>Radiological Contamination:</i> There is fixed contamination beneath the paint on the floor and building walls from the 1969 fire. It is assumed that the floor contamination levels are the same as those after the 1969 fire (i.e., 10^5 - $>10^6$ cpm) in Room 153 and $>10^6$ cpm in other rooms in this SET.</p>	<p><u>Deactivation:</u> Control/fix contamination Remove/dispose of loose combustibles Drain/dispose of solutions Remove/dispose of loose equipment Remove/dispose of loose hazardous materials</p> <p><u>Decommissioning:</u> Drain/isolate/dispose of fluid systems Control radioactive/chemical contamination Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria</p>	<p><i>Asbestos</i> <i>Beryllium</i> <i>Chemicals</i> <i>Radiological Surveys</i></p>	<p>Beryllium High levels of radiological contamination</p>	<p>PPE CBDPP Radiological Controls/ ALARA Principles</p>	<p>LLW, LLM</p>

SET NO.	SET DESCRIPTION	MAJOR ENDPOINTS	ADDITIONAL CHARACTERIZATION NEEDED	UNIQUE HAZARD ANALYSIS	HAZARD CONTROL	WASTE STREAM
55	<p>EQUIPMENT SET - Tanks SRV3 (RCRA Unit 94.001), SRV4 (RCRA Unit 94.002), SRV5 (RCRA Unit 94.003), and GB0001</p> <p><i>Beryllium:</i> Be contaminated metal may have been cleaned in the SRV. This possible Be contamination is not a safety concern due to the suspension in water and the controls necessary for radiological contamination.</p> <p><i>Chemicals:</i> Any liquids in the tanks will be drained during deactivation.</p> <p><i>Lead & Other Heavy Metals:</i> There are leaded gloves on the filter GB. Lead from the leaded glove washing (ball mill) is assumed to be present in the water within the tanks. The paint on the tanks and filter GBs may contain lead or other RCRA heavy metals.</p> <p><i>PCBs:</i> PCBs may be present in paint.</p> <p><i>SNM Holdup:</i> The tanks were scanned for Pu holdup in the early 1990s. The maximum holdup in any of the tanks is about 200 grams. The tanks will be rescanned for holdup prior to and after the rasching rings are removed.</p> <p><i>Radiological Contamination:</i> The highest fixed contamination marked on the equipment exterior is 100,000 dpm. It is assumed that the inside surface of the tanks is contaminated with >10⁶ dpm. The tanks were brought to the building for the 1969 fire cleanup; therefore, the tanks were not contaminated by the fire.</p>	<p><u>Deactivation:</u> Control/fix contamination Remove/dispose of loose combustibles Drain/dispose of solutions Remove/dispose of loose equipment Remove/dispose of loose hazardous materials</p> <p><u>Decommissioning:</u> Drain/isolate fluid systems Control radioactive/chemical contamination Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria</p>	<p><i>Chemicals</i> <i>SNM Holdup Measurement</i> <i>Radiological Surveys</i></p>	<p>High levels of radiological contamination</p>	<p>PPE Radiological Controls/ ALARA Principles</p>	<p>TRU, TRM</p>
56	<p>ROOM SET - Rooms 161 and 161A</p> <p><i>Beryllium:</i> Surface surveys will be performed prior to decommissioning activities.</p> <p><i>Chemicals:</i> There is a container of Molykote and vacuum grease in Room 161. These chemicals and any liquid in the press will be drained during deactivation.</p> <p><i>Lead & Other Heavy Metals:</i> Paint on the floor and walls may contain lead or other RCRA heavy metals. Incandescent lights contain lead and fluorescent light fixtures contain mercury. These lights will be managed as hazardous waste.</p> <p><i>PCBs:</i> A PCB determination of ballasts will be made when the ballasts are removed. PCBs may be present in paint.</p> <p><i>SNM Holdup:</i> The press will be scanned for holdup prior to dismantlement to comply with the criticality control requirements for the waste boxes.</p> <p><i>Radiological Contamination:</i> There is fixed contamination beneath the paint on the floor and building walls from the 1969 fire. It is assumed that the floor contamination levels are the same as those after the 1969 fire (i.e., >10⁶ cpm). There is contamination above the paint in Room 161A. There is 10,000 dpm contamination on the console in Room 161A. The electrical boxes are marked with internal contamination warnings.</p>	<p><u>Deactivation:</u> Control/fix contamination Remove/dispose of loose combustibles Remove/dispose of loose equipment Remove/dispose of loose hazardous materials</p> <p><u>Decommissioning:</u> Drain/isolate utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria Close subsurface volumes</p>	<p><i>Chemicals</i> <i>SNM Holdup Measurement</i> <i>Radiological Surveys</i></p>	<p>High levels of radiological contamination</p>	<p>PPE Radiological Controls/ ALARA Principles</p>	<p>LLW, LLM</p>

SET NO.	SET DESCRIPTION	MAJOR ENDPOINTS	ADDITIONAL CHARACTERIZATION NEEDED	UNIQUE HAZARD ANALYSIS	HAZARD CONTROL	WASTE STREAM
57	<p>ROOM SET - Rooms 156, 159 (RCRA Unit 776.D), 159A, 159B, 159C, and 160 (the enclosed portion of Dock 5)</p> <p><i>Asbestos:</i> The insulation in the furnaces will be managed as asbestos unless sample results or manufacturer information indicate the insulation is non-asbestos.</p> <p><i>Chemicals:</i> Acids, metals, and organics were used in the processes that were in this area. The hood exhaust and furnaces may be contaminated with residual metals from the coating material.</p> <p><i>Lead & Other Heavy Metals:</i> There is lead brick in Room 156. The paint on the floor and walls may contain lead or other RCRA heavy metals. Fluorescent light fixtures contain mercury. These lights will be managed as RCRA hazardous waste. Thermostats may contain mercury.</p> <p><i>PCBs:</i> A PCB determination of ballasts will be made when the ballasts are removed. PCBs may be present in paint.</p> <p><i>Radiological Contamination:</i> There is fixed contamination beneath the paint on the floor and building walls from the 1969 fire. It is assumed that the floor contamination levels are the same as those after the 1969 fire (i.e., $10^3 - 10^5$ cpm).</p>	<p>Deactivation: Control/fix contamination Remove/dispose of loose combustibles Remove/dispose of loose equipment Remove/dispose of loose hazardous materials</p> <p>Decommissioning: Drain/isolate utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria</p>	<p><i>SVM Holdup Measurement</i></p> <p><i>Radiological Surveys</i></p>	<p>High levels of radiological contamination</p>	<p>PPE</p> <p>Radiological Controls/ ALARA Principles</p>	<p>LLW, LLM</p>
58	<p>ROOM SET - Rooms 157 and 158</p> <p><i>Asbestos:</i> The tile floor in Room 157 may contain asbestos.</p> <p><i>Beryllium:</i> There is no record of Be storage or processing in this area. Surface surveys will be performed prior to initiating decommissioning to confirm that there is no Be contamination in this area.</p> <p><i>Chemicals:</i> The paint in the flammable cabinet, refrigerant in the air conditioner, Varsol, and oil will be removed prior to decommissioning.</p> <p><i>Lead & Other Heavy Metals:</i> There are lead sheets, bricks, and tape in this set. Thermostats may contain mercury. The paint on the floor and walls may contain lead or other RCRA heavy metals. Incandescent lights contain lead and fluorescent light fixtures contain mercury. These lights will be managed as RCRA hazardous waste.</p> <p><i>PCBs:</i> A PCB determination of ballasts will be made when the ballasts are removed. PCBs may be present in paint.</p> <p><i>Radiological Contamination:</i> A nitrogen cylinder is marked as having fixed contamination. There is fixed contamination beneath the paint on the floor and building walls from the 1969 fire. It is assumed that the floor contamination levels are the same as those after the 1969 fire (i.e., $10^3 - 10^5$ cpm).</p>	<p>Deactivation: Control/fix contamination Remove/dispose of loose combustibles Remove/dispose of loose equipment Remove/dispose of loose hazardous materials</p> <p>Decommissioning: Drain/isolate utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria</p>	<p><i>Asbestos</i></p> <p><i>Beryllium</i></p> <p><i>Radiological Surveys</i></p>	<p>High levels of radiological contamination</p>	<p>PPE</p> <p>Radiological Controls/ ALARA Principles</p>	<p>LLW, LLM</p>

SET NO.	SET DESCRIPTION	MAJOR ENDPOINTS	ADDITIONAL CHARACTERIZATION NEEDED	UNIQUE HAZARD ANALYSIS	HAZARD CONTROL	WASTE STREAM
59	<p>ROOM SET - Rooms 002, 138, 139, 144, and 147; room south of Room 144; and tunnel to Building 771</p> <p><i>Asbestos:</i> The insulation in Room 144 will be managed as asbestos waste unless sample results indicate that the insulation is non-asbestos.</p> <p><i>Chemicals:</i> The oil in the vacuum pump will be drained during deactivation. The hydraulic oil for the elevator will not be drained until the elevator is removed from service. If the portable tank contains any liquid, the liquid will be removed during deactivation.</p> <p><i>Lead & Other Heavy Metals:</i> There are lead aprons in the SET. The paint on the floor and walls may contain lead or other RCRA heavy metals. Incandescent lights contain lead and fluorescent light fixtures contain mercury. These lights will be managed as RCRA hazardous waste.</p> <p><i>PCBs:</i> A PCB determination of ballasts will be made when the ballasts are removed. PCBs may be present in paint.</p> <p><i>Radiological Contamination:</i> The portable tank is marked as having 15,000 dpm fixed contamination. The baler and elevator shaft are internally contaminated with Pu. There is fixed contamination beneath the paint on the floor and building walls from the 1969 fire. It is assumed that the floor levels are the same as those after the 1969 fire (i.e., $10^5 - 10^6$ cpm).</p>	<p>Deactivation: Control/fix contamination Remove/package classified material Remove/dispose of loose combustibles Drain/dispose of solutions Remove/dispose of loose equipment Remove/dispose of loose hazardous materials</p> <p>Decommissioning: Drain/isolate fluid systems Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria</p>	<p><i>Chemicals</i></p> <p><i>Radiological Surveys</i></p>	High levels of radiological contamination	High levels of radiological contamination	LLW, LLM

SET NO.	SET DESCRIPTION	MAJOR ENDPOINTS	ADDITIONAL CHARACTERIZATION NEEDED	UNIQUE HAZARD ANALYSIS	HAZARD CONTROL	WASTE STREAM
60	<p>ROOM/EQUIPMENT SET - Room 146, including Ball Mill Washer (RCRA Unit 94.009), Collection Pan (RCRA Unit 94.010), and Annular Tank (RCRA Unit 94.011), plus Rooms 146A, 146B, and 146C, including SRV Treatment and Storage Units (RCRA Unit 61)</p> <p><i>Asbestos:</i> There is no insulation, floor tile or fire blankets visible on the 1989 photographs of the vault interior. An updated visual characterization is needed to see if any insulation waste has been placed in the vault since the photographs were taken.</p> <p><i>Beryllium:</i> Be contaminated metal may have been sized reduced in the SRV.</p> <p><i>Chemicals:</i> The oil in the equipment and any residual liquid in the ball mill collection ring or piping will be drained prior to decommissioning. A supplied air entry of the SRV is needed to determine if any containerized chemicals exist.</p> <p><i>Lead & Other Heavy Metals:</i> There is lead shielding on the east side of the vault. The paint on the floor and walls may contain lead or other RCRA heavy metals. Incandescent lights contain lead. These lights will be managed as RCRA hazardous waste.</p> <p><i>PCBs:</i> No PCB items are visible on the 1989 photographs of the area. A visual inspection is needed to determine if PCB ballasts are stored in the vault. PCBs may be present in paint.</p> <p><i>SNM Holdup:</i> Not yet determined. The wash table and ball mill need to be scanned for SNM holdup. The scans will be performed in FY99 and FY00.</p> <p><i>Radiological Contamination:</i> The SRV is expected to be contaminated >10⁶ dpm Pu on the inner surfaces. There is fixed contamination beneath the paint on the floor and building walls from the 1969 fire. It is assumed that the floor contamination levels are the same as those after the 1969 fire (i.e., >10⁶ cpm).</p>	<p><u>Deactivation:</u> Control/fix contamination Remove/dispose of loose combustibles Drain/dispose of solutions Remove/dispose of loose equipment Remove/dispose of loose hazardous materials</p> <p><u>Decommissioning:</u> Drain/isolate fluid systems Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria</p>	<p><i>Asbestos</i> <i>Beryllium</i> <i>Chemicals</i> <i>SNM Holdup Measurement</i> <i>Radiological Surveys</i></p>	<p>Beryllium High levels of radiological contamination</p>	<p>PPE CBDPP Radiological Controls/ ALARA Principles</p>	<p>TRU, TRM, LLW, LLM</p>
61	<p>ROOM/EQUIPMENT SET - Room 135, FBI Pilot Unit, including Tanks T-1 & T-2 (RCRA Unit 49.02)</p> <p><i>Asbestos:</i> Insulation on the equipment will be managed as asbestos waste unless sample results indicate that the insulation is nonasbestos.</p> <p><i>Chemicals:</i> The ALARA paint and other containerized chemicals will be removed during deactivation.</p> <p><i>Lead & Other Heavy Metals:</i> There are leaded gloves on the canyon wall. The paint on the floor and walls may contain lead or other RCRA heavy metals. Incandescent lights contain lead and fluorescent light fixtures contain mercury. These lights will be managed as RCRA hazardous waste.</p> <p><i>PCBs:</i> A PCB determination of ballasts will be made when the ballasts are removed. PCBs may be present in paint. Though PCBs were generated in the FBI, the ash is not Toxic Substance Control Act (TSCA) Regulated.</p> <p><i>Radiological Contamination:</i> The FBI is internally contaminated with Pu. The GBs are expected to be contaminated >10⁶ dpm Pu on the inner surfaces. There is fixed contamination beneath the paint on the floor and building walls from the 1969 fire. It is assumed that the floor contamination levels are the same as those after the 1969 fire (i.e., 10⁶ - >10⁷ cpm).</p>	<p><u>Deactivation:</u> Control/fix contamination Remove/dispose of loose combustibles Drain/dispose of solutions Remove/dispose of loose equipment Remove/dispose of loose hazardous materials</p> <p><u>Decommissioning:</u> Drain/isolate fluid systems Control radioactive/chemical contamination Drain/isolate/remove/dispose Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria Remove/dispose of specified constituents</p>	<p><i>Radiological Surveys</i></p>	<p>High levels of radiological contamination</p>	<p>High levels of radiological contamination</p>	<p>LLW, LLM</p>

Building 776/777 Closure Project
Decommissioning Operations Plan

Revision 0
October 18, 1999

SET NO.	SET DESCRIPTION	MAJOR ENDPOINTS	ADDITIONAL CHARACTERIZATION NEEDED	UNIQUE HAZARD ANALYSIS	HAZARD CONTROL	WASTE STREAM
62	<p>ROOM/EQUIPMENT SET - Tanks FBI-1 & FBI-2, and Oil Storage Tanks T-1 & T-2 (RCRA Units 44.01 & 44.02), and Associated Room</p> <p><i>Beryllium:</i> No process data for Be is available. In process surveys/sampling are needed.</p> <p><i>Chemicals:</i> Organic liquids were stored in these tanks. The liquids were drained in 1998.</p> <p><i>Lead & Other Heavy Metals:</i> Based on the 1992 analysis of liquid from the tank that leaked on the floor, cadmium and chromium are present in the oil.</p> <p><i>Radiological Contamination:</i> The rings in one of the tanks were found to be contaminated (about 10,000 cpm) when they were removed in 1998.</p>	<p><u>Deactivation:</u> Control/fix contamination Remove/dispose of loose combustibles Drain/dispose of solutions Remove/dispose of loose equipment Remove/dispose of loose hazardous materials</p> <p><u>Decommissioning:</u> Drain/isolate fluid systems Control radioactive/chemical contamination Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria</p>	<p><i>Beryllium</i> <i>Lead & Other Heavy Metals</i> <i>SWM Holdup Measurement</i> <i>Radiological Surveys</i></p>	<p>High levels of radiological contamination</p>	<p>PPE Radiological Controls/ ALARA Principles</p>	<p>LLM</p>
63	<p>ROOM/EQUIPMENT SET - Rooms 118, 118A, 118B, 118C, 118D, 118E, 118F, 118G, 118H, and FBI Production Unit (RCRA Unit 49.01)</p> <p><i>Asbestos:</i> Insulation on equipment will be managed as asbestos unless sample results indicate the insulation is non-asbestos.</p> <p><i>Beryllium:</i> There is no record of Be storage or processing in this area. Surface surveys will be performed prior to initiating decommissioning activities to confirm there is no Be contamination in the area.</p> <p><i>Chemicals:</i> hydraulic oil will be drained from tanks during deactivation. Hydraulic oil for the elevator will not be drained until the elevator is removed from service. If portable tank contains liquid, it will be removed during deactivation.</p> <p><i>Lead & Other Heavy Metals:</i> There are leaded gloves on the canyon wall. The paint on the floor and walls may contain lead or other RCRA heavy metals. Incandescent lights contain lead and fluorescent light fixtures contain mercury. These lights will be managed as RCRA hazardous waste.</p> <p><i>PCBs:</i> A PCB determination of ballasts will be made when the ballasts are removed. PCBs may be present in paint.</p> <p><i>Radiological Contamination:</i> The FBI is internally contaminated with low levels of Pu contamination. There is fixed contamination beneath the paint on the floor and building walls from the 1969 fire. It is assumed that the floor levels are the same as those after the 1969 fire (i.e., >106 cpm).</p>	<p><u>Deactivation:</u> Control/fix contamination Remove/dispose of loose combustibles Drain/dispose of solutions Remove/dispose of loose equipment Remove/dispose of loose hazardous materials</p> <p><u>Decommissioning:</u> Drain/isolate systems Control radioactive/chemical contamination Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria Remove/dispose of specified constituents</p>	<p><i>Beryllium</i> <i>Chemicals</i> <i>Radiological Surveys</i></p>	<p>High levels of radiological contamination</p>	<p>PPE Radiological Controls/ ALARA Principles</p>	<p>LLW, LLM</p>

SET NO.	SET DESCRIPTION	MAJOR ENDPOINTS	ADDITIONAL CHARACTERIZATION NEEDED	UNIQUE HAZARD ANALYSIS	HAZARD CONTROL	WASTE STREAM
64	<p>GLOVEBOX SET - SARF GBs 512, 513, 515, 517, 518, 521-1, 521-2, including RCRA Unit 74</p> <p><i>Chemicals:</i> The hydraulic oil will be drained during deactivation. If the collection ring contains any liquid, the liquid will be drained during deactivation.</p> <p><i>Lead & Other Heavy Metals:</i> There are leaded gloves on the SARF GBs. The fluorescent lights contain mercury, and will be managed as RCRA hazardous waste. Representative samples of the paint throughout the building will be analyzed prior to removal of the paint or painted item.</p> <p><i>PCBs:</i> A PCB determination of ballasts will be made when the ballasts are removed. PCBs may be present in paint.</p> <p><i>SNM Holdup:</i> The potential for holdup in these GBs is extremely low since the GBs were used for a short period of time on material that was well contained. However, these GBs will need to be scanned for SNM holdup prior to removal based on the current criticality limit requirements.</p> <p><i>Radioisotope sources:</i> The Pu sources for alpha mets need to be removed.</p> <p><i>Radiological Contamination:</i> The internal surfaces of the SARF are Pu contaminated. The level of contamination is not known at this time and will need to be determined by in-process surveys. Since the SARF was used for only a short time on TRU waste, the contamination may be lower than in other GBs within the building. Based on discussions with two of the operators, the heaviest contamination should be on the pre-compactor ram and supercompactor piston.</p>	<p><u>Deactivation:</u> Control/fix contamination Remove/dispose of loose combustibles Drain/dispose of solutions Remove/dispose of loose equipment Remove/dispose of loose hazardous materials</p> <p><u>Decommissioning:</u> Drain/isolate fluid systems Control radioactive/chemical contamination Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria</p>	<p><i>Beryllium</i> <i>Chemicals</i> <i>Radiological Surveys</i></p>	High levels of radiological contamination	<p>PPE</p> <p>Radiological Controls/ ALARA Principles</p>	<p>TRU, TRM, LLW, LLM</p>
65	<p>ROOM SET - Rooms 1271, 136, 141, 150, and 150A</p> <p><i>Asbestos:</i> The insulation on the equipment will be managed as asbestos waste unless sample results indicate that the insulation is non-asbestos.</p> <p><i>Chemicals:</i> There are a number of chemicals in this SET, including antifreeze, oil, and freon refrigerant. These chemicals will be in use until the utility equipment is no longer needed. Any containers of chemicals will be removed prior to decommissioning. In addition, the liquid reservoirs on the utility equipment will be drained.</p> <p><i>Lead & Other Heavy Metals:</i> The paint on the floor and walls may contain lead or other RCRA heavy metals. Incandescent lights contain lead and fluorescent light fixtures contain mercury. These lights will be managed as RCRA hazardous waste.</p> <p><i>PCBs:</i> A PCB determination of ballasts will be made when the ballasts are removed. PCBs may be present in paint.</p> <p><i>Radiological Contamination:</i> There is fixed contamination beneath the paint on the floor and building walls from the 1969 fire. It is assumed that the floor contamination levels are the same as those after the 1969 fire (i.e., 10^{-6} - $> 10^6$ cpm).</p>	<p><u>Deactivation:</u> Remove/dispose of loose combustibles Drain/dispose of solutions Remove/dispose of loose equipment Remove/dispose of loose hazardous materials</p> <p><u>Decommissioning:</u> Control radioactive/chemical contamination Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria</p>	<p><i>Chemicals</i> <i>Radiological Surveys</i></p>	High levels of radiological contamination	<p>PPE</p> <p>Radiological Controls/ ALARA Principles</p>	<p>LLW, LLM, SAN</p>

SET NO.	SET DESCRIPTION	MAJOR ENDPOINTS	ADDITIONAL CHARACTERIZATION NEEDED	UNIQUE HAZARD ANALYSIS	HAZARD CONTROL	WASTE STREAM
66	<p>ROOM/EQUIPMENT SET - ASRF (RCRA Units 776.1 and 776.3), including RDA, MDA, TA, J177, J176, J340, J341, J357, J270, Rooms 130, 130A, 209, 228 and Filter Units, Tank T-344 (RCRA Unit 94.005) and Tank T-345 (RCRA Unit 94.006)</p> <p><i>Asbestos:</i> There is insulation on the steam piping within Room 228. There are high-temperature mittens within GB J-341.</p> <p><i>Beryllium:</i> Be contaminated metal may have been size reduced in the ASRF.</p> <p><i>Chemicals:</i> The oil in the equipment and any residual condensate in the steam condensate tanks or piping will be drained during deactivation. The containers of liquid in the GBs and the DOP in Room 228 will be removed during deactivation.</p> <p><i>Lead & Other Heavy Metals:</i> There are leaded gloves on the GBs. The paint on the floor and walls may contain lead or other RCRA heavy metals. Incandescent lights contain lead and fluorescent light fixtures contain mercury. These lights will be managed as RCRA hazardous waste.</p> <p><i>PCBs:</i> A PCB determination of ballasts will be made when the ballasts are removed. PCBs may be present in paint.</p> <p><i>SNM Holdup:</i> The GBs in this SET will be scanned for SNM Holdup in FY99 and FY00.</p> <p><i>Radioactive Sources:</i> There are several Pu sources in the ASRF. The sources will be removed when this SET is deactivated.</p> <p><i>Radiological Contamination:</i> The internal surfaces of the ASRF are contaminated. The GBs and the canyons are expected to be contaminated >10⁶ dpm Pu on the inner surfaces. There is fixed contamination beneath the paint on the floor and building walls from the 1969 fire. It is assumed that the floor contamination levels are the same as those after the 1969 fire (i.e., 10⁵ - 10⁶ opm for Rooms 130, 130A, 209 and 228).</p>	<p><u>Deactivation:</u> Control/fix contamination Remove/package classified material Remove/dispose of loose combustibles Drain/dispose of solutions Remove/dispose of loose equipment Remove/dispose of loose hazardous materials</p> <p><u>Decommissioning:</u> Drain/isolate fluid systems Control radioactive/chemical contamination Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria</p>	<p><i>Beryllium</i> <i>Chemicals</i> <i>SNM Holdup Measurement</i> <i>Radiological Surveys</i></p>	<p>Beryllium High levels of radiological contamination</p>	<p>PPE CBDPP Radiological Controls/ ALARA Principles</p>	<p>TRU, TRM, LLW, LLM</p>

SET NO.	SET DESCRIPTION	MAJOR ENDPOINTS	ADDITIONAL CHARACTERIZATION NEEDED	UNIQUE HAZARD ANALYSIS	HAZARD CONTROL	WASTE STREAM
67	<p>ROOM SET - Rooms 123, 134 (RCRA Unit 776.1), and 137</p> <p><i>Beryllium:</i> Be parts were moved through this SET on carts. There is no indication that the rooms became contaminated from these parts. Surface surveys will be performed prior to initiating decontamination activities to confirm there is no Be contamination in this area.</p> <p><i>Chemicals:</i> Any liquids in equipment will be drained during deactivation. The gas cylinders associated with the PCMs will not be removed until the PCMs are no longer needed.</p> <p><i>Lead & Other Heavy Metals:</i> The paint on the floor and walls may contain lead or other RCRA heavy metals. Fluorescent light fixtures contain mercury. These lights will be managed as RCRA hazardous waste.</p> <p><i>PCBs:</i> A PCB determination of ballasts will be made when the ballasts are removed. PCBs may be present in paint.</p> <p><i>Radiological Contamination:</i> There is fixed contamination beneath the paint on the floor and building walls from the 1969 fire. It is assumed that the floor contamination levels are the same as those after the 1969 fire (i.e., $>10^6$ cpm).</p>	<p><u>Deactivation:</u> Control/fix contamination Remove/dispose of loose combustibles Remove/dispose of loose equipment Remove/dispose of loose hazardous materials</p> <p><u>Decommissioning:</u> Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria</p>	<p><i>Beryllium</i></p> <p><i>Chemicals</i></p> <p><i>Radiological Surveys</i></p>	<p>Beryllium</p> <p>High levels of radiological contamination</p>	<p>PPE</p> <p>CBDPP</p> <p>Radiological Controls/ ALARA Principles</p>	<p>LLW, LLM</p>
68	<p>ROOM SET - Rooms 001 (RCRA Unit 90.99), 127 (RCRA Unit 776.1), 127A, and 127B</p> <p><i>Lead and Other Heavy Metals:</i> The fence around the process waste tanks has 1/8 inch lead shielding. Representative samples of paint from the rooms will be taken if necessary. Fluorescent lights may contain mercury.</p> <p><i>PCBs:</i> Ballasts within fluorescent light fixtures may contain PCBs. Paint may be sampled for PCBs.</p> <p><i>Radiological:</i> The map of floor contamination levels after the fire indicates contamination $>10^6$ cpm. The paint on the floor has bubbled several times; surveys completed for radiological contamination verify the contamination levels after the fire.</p>	<p><u>Deactivation:</u> Control/fix contamination Remove/dispose of loose combustibles Drain/dispose of solutions Remove/dispose of loose equipment Remove/dispose of loose hazardous materials</p> <p><u>Decommissioning:</u> Drain/isolate utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria</p>	<p><i>Radiological Surveys</i></p>	<p>High levels of radiological contamination</p>	<p>PPE</p> <p>Radiological Controls/ ALARA Principles</p>	<p>LLW, LLM, TRU</p>

SET NO.	SET DESCRIPTION	MAJOR ENDPOINTS	ADDITIONAL CHARACTERIZATION NEEDED	UNIQUE HAZARD ANALYSIS	HAZARD CONTROL	WASTE STREAM
69	<p>TANK SET - Tanks T-1A, T-1B, T-2A, & T-2B (RCRA Unit 776.2), Tank T-3, and Bermed Area</p> <p><i>Beryllium:</i> Be contaminated metal may have been cleaned in the SRV. Wash water from the SRV was shipped to Tanks T1A and T1B. The process waste from Building 779 may have contained small amounts of Be. This possible Be contamination is not a safety concern due to the suspension in water and the controls necessary for the radiological contamination.</p> <p><i>Chemicals:</i> Any liquids in the tanks or piping will be drained prior to the removal of the piping. The process waste tanks are RCRA regulated.</p> <p><i>Lead & Other Heavy Metals:</i> The tanks were permitted for RCRA heavy metals.</p> <p><i>PCBs:</i> PCBs may be present in paint.</p> <p><i>SNM Holdup:</i> The process waste tanks are limited to fissile exempt liquid by the Nuclear Materials Safety Limits. Tank T-3 may be more contaminated inside since the water from the plenums is not necessarily fissile exempt liquid.</p> <p><i>Radiological Contamination:</i> The process waste tanks are limited to fissile exempt liquid by the Nuclear Material Safety Limits. Tank T-3 may be more contaminated inside since the water from the plenums is not necessarily fissile exempt liquid. There is fixed contamination beneath the paint on the floor and building walls from the 1969 fire. It is assumed that the floor levels are the same as those after the 1969 fire (i.e., $>10^6$ cpm).</p>	<p>Deactivation: Remove/dispose of loose combustibles Drain/dispose of solutions Remove/dispose of loose equipment Remove/dispose of loose hazardous materials</p> <p>Decommissioning: Drain/isolate systems Control radioactive/chemical contamination Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria</p>	<p><i>Chemicals</i> <i>SNM Holdup Measurement</i> <i>Radiological Surveys</i></p>	High levels of radiological contamination		LLW, TRU
70	<p>ROOM SET - Rooms 205, 206, 208 (RCRA Units 776.1 & 777.1), 219, 237 (RCRA Unit 776.1), and 232 to 256 (not all inclusive)</p> <p><i>Asbestos:</i> Floor tiles and pipe insulation in several rooms may contain asbestos.</p> <p><i>Beryllium:</i> Be was not stored or processed on the second floor of Building 776 or 777B. Be was handled on the first floor of the Building 777B. In process surveys for Be contamination will be needed when building components are removed. The only potential site of Be contamination on the second floor of Building 776 is the exhaust ducting and plenums. Surface surveys will be performed prior to initiating decommissioning activities.</p> <p><i>Lead & Other Heavy Metals:</i> The paint on the floor and walls may contain lead or other RCRA heavy metals. Fluorescent light fixtures contain mercury. These lights will be managed as RCRA hazardous waste.</p> <p><i>PCBs:</i> A PCB determination of ballasts will be made when the ballasts are removed. PCBs may be present in paint.</p> <p><i>Radiological Contamination:</i> The GBs are expected to be contaminated $>10^6$ dpm Pu on the inner surfaces. The maximum fixed contamination on the exterior of the GBs is 600,000 dpm. There is fixed contamination beneath the paint on the floor and building walls from the 1969 fire. It is assumed that the floor contamination levels are the same as those after the 1969 fire (i.e., $10^6 - 10^8$ cpm).</p>	<p>Deactivation: Control/fix contamination Remove/dispose of loose combustibles Drain/dispose of solutions Remove/dispose of loose equipment Remove/dispose of loose hazardous materials</p> <p>Decommissioning: Drain/isolate fluid systems Control radioactive/chemical contamination Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria</p>	<p><i>Asbestos</i> <i>Beryllium</i> <i>Chemicals</i> <i>Radiological Surveys</i></p>	Beryllium	PPE CBDPP	LLW, LLM

SET NO.	SET DESCRIPTION	MAJOR ENDPOINTS	ADDITIONAL CHARACTERIZATION NEEDED	UNIQUE HAZARD ANALYSIS	HAZARD CONTROL	WASTE STREAM
71	<p>EQUIPMENT SET - Superdry Air Drying System, 2nd Floor</p> <p><i>Asbestos:</i> The insulation on the ducting contains asbestos.</p> <p><i>Beryllium:</i> Be was stored, cleaned, and assembled in the Superdry facility. None of these operations would cause significant airborne contamination. Surface surveys will be performed prior to initiating decommissioning activities.</p> <p><i>Chemicals:</i> The dryers are filled with silica gel.</p> <p><i>Lead & Other Heavy Metals:</i> The paint on the floor and walls may contain lead or other RCRA heavy metals.</p> <p><i>PCBs:</i> PCBs may be present in paint.</p> <p><i>Radiological Contamination:</i> The dryers may be slightly contaminated from room exhaust.</p>	<p>Deactivation: Control/fix contamination Remove/dispose of loose combustibles Drain/dispose of solutions Remove/dispose of loose equipment Remove/dispose of loose hazardous materials</p> <p>Decommissioning: Drain/isolate fluid systems Control radioactive/chemical contamination Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria</p>	<p><i>Beryllium</i> <i>Radiological Surveys</i></p>	Beryllium	PPE CBDPP	LLW
72	<p>EQUIPMENT SET - GB Dry Air Drying System, 2nd Floor</p> <p><i>Asbestos:</i> The insulation on the Kathabar K-1 is listed in the asbestos inventory. Insulation on the remaining units will be managed as asbestos.</p> <p><i>Beryllium:</i> The only potential site of Be contamination on the second floor is the exhaust plenums. Surface surveys will be performed prior to initiating decommissioning activities.</p> <p><i>Chemicals:</i> Any freon refrigerant remaining in the compressors will be removed during deactivation.</p> <p><i>Lead & Other Heavy Metals:</i> Kathene sludge has been analyzed and shown to contain regulated amounts of cadmium, chromium and lead.</p> <p><i>PCBs:</i> The lubricating oil in the Kathabars will be tested for PCBs since the unit is pre 1970s and the oil has not been changed since the 1960s. PCBs may be present in paint.</p> <p><i>SNM Holdup:</i> GB exhaust was not routed through this unit during its operation. The contamination in the unit is from the makeup air drawn from the 2nd floor during the 1969 fire.</p> <p><i>Radiological Contamination:</i> The GBDA Cathedra is known to be internally contaminated from the 1969 fire.</p>	<p>Deactivation: Control/fix contamination Remove/dispose of loose combustibles Drain/dispose of solutions Remove/dispose of loose equipment Remove/dispose of loose hazardous materials</p> <p>Decommissioning: Drain/isolate fluid systems Control radioactive/chemical contamination Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria</p>	<p><i>Beryllium</i> <i>Chemicals</i> <i>Lead & Other Heavy Metals:</i> Sludge <i>SNM Holdup</i> <i>Measurement</i></p>	Beryllium	PPE CBDPP	LLW, LLM

Building 776/777 Closure Project
Decommissioning Operations Plan

Revision 0
October 18, 1999

SET NO.	SET DESCRIPTION	MAJOR ENDPOINTS	ADDITIONAL CHARACTERIZATION NEEDED	UNIQUE HAZARD ANALYSIS	HAZARD CONTROL	WASTE STREAM
73	<p>EQUIPMENT SET - Remainder of the 2nd Floor Equipment Not in Other SETS</p> <p><i>Asbestos:</i> Asbestos has been detected in multiple insulation samples on the 2nd floor. The insulation on the piping and equipment in this SET will be managed as asbestos contaminated waste.</p> <p><i>Beryllium:</i> The only potential site of Be contamination on the second floor is in the exhaust plenums. Surveys will be performed prior to initiating decommissioning activities.</p> <p><i>Chemicals:</i> Any liquids or compressed gases will be drained from the equipment prior to removing the equipment. This includes brine, freon, oil and water.</p> <p><i>Lead & Other Heavy Metals:</i> The paint on the floor and walls may contain lead or other RCRA heavy metals</p> <p><i>PCBs:</i> PCBs may be present in paint.</p> <p><i>Radiological Contamination:</i> The reheat system is known to be internally contaminated. The remaining equipment may be contaminated since the SET is contained within a Radiation Buffer Area (RBA). Unless the equipment is unpainted and 100% surveyable, the equipment will be disposed of as LLW.</p>	<p><u>Deactivation:</u> Control/fix contamination Remove/package classified material Remove/dispose of loose combustibles Drain/dispose of solutions Remove/dispose of loose equipment Remove/dispose of loose hazardous materials</p> <p><u>Decommissioning:</u> Drain/isolate fluid systems Control radioactive/chemical contamination Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria</p>	<p><i>Beryllium</i> <i>Chemicals</i> <i>Radiological Surveys</i></p>	<p>Beryllium</p>	<p>PPE CBDPP</p>	<p>LLW</p>
74	<p>BUILDING STRUCTURE SET - Building 702, 712 and 712A</p> <p><i>Asbestos:</i> The insulation on the steam lines in Building 702 will be managed as asbestos waste unless sampling indicates otherwise. The baffles on the cooling tower will be sampled for asbestos.</p> <p><i>Chemicals:</i> There are several drums of oil that will be removed from Building 702 during deactivation. Liquids from the motors, pumps, and piping will be drained also.</p> <p><i>Lead & Other Heavy Metals:</i> Incandescent lights contain lead. Fluorescent light fixtures and mercoid switches contain mercury. These items will be managed as RCRA hazardous waste.</p> <p><i>Radiological Contamination:</i> There is no indication of radiological contamination in these buildings. Surveys will be performed to verify contamination is not present.</p>	<p><u>Deactivation:</u> Control/fix contamination Remove/dispose of loose combustibles Drain/dispose of solutions Remove/dispose of loose equipment Remove/dispose of loose hazardous materials</p> <p><u>Decommissioning:</u> Control radioactive/chemical contamination Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria Remove/dispose of specified constituents Remove/dispose of structures Close subsurface volumes</p>	<p><i>Asbestos</i> <i>Chemicals</i> <i>Radiological Surveys</i></p>	<p>None</p>	<p>PPE</p>	<p>HAZ, SAN</p>

Building 77 Closure Project
Decommissioning Operations Plan

Revision 0
October 18, 1999

SET NO.	SET DESCRIPTION	MAJOR ENDPOINTS	ADDITIONAL CHARACTERIZATION NEEDED	UNIQUE HAZARD ANALYSIS	HAZARD CONTROL	WASTE STREAM
75	<p>BUILDING STRUCTURE SET - Building 781</p> <p><i>Beryllium:</i> Not yet known; there is no process history for the items tested in the chamber in Building 781.</p> <p><i>Chemicals:</i> A cylinder of helium in the building will be removed prior to decommissioning.</p> <p><i>Lead & Other Heavy Metals:</i> Incandescent lights contain. These lights will be managed as RCRA hazardous waste.</p> <p><i>Radiological Contamination:</i> There is no indication of radiological contamination in this building. However, the compressor lines from Building 781 pass into a Contamination Area in Room 459A, Building 777. Surveys will be performed to verify contamination is not present.</p>	<p><u>Deactivation:</u></p> <p>Remove/dispose of loose combustibles</p> <p>Drain/dispose of solutions</p> <p>Remove/dispose of loose hazardous materials</p> <p><u>Decommissioning:</u></p> <p>Drain/isolate/remove/dispose of utility systems</p> <p>Remove/dispose of equipment & associated piping/conduit</p> <p>Package to waste acceptance criteria</p> <p>Remove/dispose specified constituents</p> <p>Close subsurface volumes</p>	<p><i>Beryllium</i></p> <p><i>Radiological Surveys</i></p>	None	PPE	LLW, LLM
76	<p>BUILDING STRUCTURE SET - Building 701, 710 and 730</p> <p><i>Asbestos:</i> The insulation in these buildings will be managed as asbestos waste unless sampling indicates otherwise.</p> <p><i>Beryllium:</i> There may be historical Be contamination from the laundry water in Building 730. There is no indication of Be handling or storage in Building 701 or 710.</p> <p><i>Chemicals:</i> There are several gas cylinders that will be removed from Building 701 during deactivation. Liquids from the motors, pumps and piping will be drained also.</p> <p><i>Lead & Other Heavy Metals:</i> Incandescent lights contain lead, fluorescent light fixtures contain mercury, and sodium vapor lights can contain lead and mercury. These lights will be managed as RCRA hazardous waste. There are leaded gloves stored in this SET.</p> <p><i>PCBs:</i> A PCB determination of ballasts will be made when the ballasts are removed</p> <p><i>Radiological Contamination:</i> The liquids handled in Building 730 were radioactively contaminated. Building 701 has been contaminated twice by incidents related to process waste backing up into a toilet in 1972 and personnel spreading contamination from Building 730 in 1975. The building was decontaminated after both incidents. There is no indication of radiological contamination in Building 710.</p>	<p><u>Deactivation:</u></p> <p>Control/fix contamination</p> <p>Remove/dispose of loose combustibles</p> <p>Drain/dispose of solutions</p> <p>Remove/dispose of loose equipment</p> <p>Remove/dispose of loose hazardous materials</p> <p><u>Decommissioning:</u></p> <p>Drain/isolate fluid systems</p> <p>Control radioactive/chemical contamination</p> <p>Drain/isolate/remove/dispose of utility systems</p> <p>Remove/dispose of equipment & associated piping/conduit</p> <p>Package to waste acceptance criteria</p> <p>Remove/dispose of specified constituents</p> <p>Remove/dispose of structures</p> <p>Close subsurface volumes</p>	<p><i>Beryllium</i></p> <p><i>Chemicals</i></p> <p><i>Radiological Surveys</i></p>	Beryllium	PPE CBDPP	LLW, HAZ, SAN

SET NO.	SET DESCRIPTION	MAJOR ENDPOINTS	ADDITIONAL CHARACTERIZATION NEEDED	UNIQUE HAZARD ANALYSIS	HAZARD CONTROL	WASTE STREAM
77	<p>EQUIPMENT SET - Chillers #2 and #3 (not in use) in Room 150</p> <p><i>Asbestos:</i> Asbestos has been detected in samples of the Chiller #5 insulation. Based on this information and the age of Chillers #2 and #3, it is assumed that the insulation on these chillers contains asbestos.</p> <p><i>Chemicals:</i> Any brine or oil remaining in the chillers will be drained prior to removal of the chillers.</p> <p><i>Lead & Other Heavy Metals:</i> The paint on the floor and walls may contain lead or other RCRA heavy metals.</p> <p><i>PCBs:</i> A PCB determination of ballasts will be made when the ballasts are removed. PCBs may be present in paint.</p> <p><i>Radiological Contamination:</i> There is fixed contamination beneath the paint on the floor and building walls from the 1969 fire. It is assumed that the floor contamination levels are the same as those after the 1969 fire (i.e., 10^3 - $>10^6$ cpm).</p>	<p><u>Deactivation:</u> Control/fix contamination Remove/dispose of loose combustibles Drain/dispose of solutions Remove/dispose of loose hazardous materials</p> <p><u>Decommissioning:</u> Control radioactive/chemical contamination Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria</p>	<p><i>Chemicals</i> <i>Radiological Surveys</i></p>	<p>High levels of radiological contamination</p>	<p>PPE Radiological Controls/ ALARA Principles</p>	<p>LLW</p>
78	<p>EQUIPMENT SET - Miscellaneous Unused Piping (e.g. machine coolant, CCl₄, trichloroethane, process waste, and argon)</p> <p><i>Beryllium:</i> The possibility of Be contamination exists in the waste lines (process, machine coolant and trichloroethane). This possible Be contamination is not a safety concern due to the suspension in oil and the controls necessary for the radiological contamination. Be contamination is expected in the argon system as well.</p> <p><i>Chemicals:</i> Sections of piping will be drained prior to removal of the pipe. The liquids will be characterized according to the individual system (i.e., process waste, trichloroethane, and machine coolant).</p> <p><i>SVM Holdup:</i> The piping will be scanned prior to disposal to comply with current criticality limit requirements. It is anticipated the holdup amounts will be modest if any for the waste lines. The amounts in the argon system may be higher than the other systems in this SET if the argon was not filtered prior to leaving the GB.</p> <p><i>Radiological Contamination:</i> Based on the removal of waste trichloroethane and machine coolant lines in 1995 and 1998, the interior of this piping is contaminated $>10^6$ dpm. The painted supply piping may be contaminated on the exterior. The process waste piping will be contaminated to varying degrees depending on the source of the liquid (i.e., the line for size reduction will be more contaminated than the lines from the ASRP or the 2nd floor). The argon line in Room 475 is assumed to be contaminated with $>10^6$ dpm Pu since these units contained GB atmosphere.</p>	<p><u>Deactivation:</u> Control/fix contamination Remove/dispose of loose combustibles Drain/dispose of solutions Remove/dispose of loose hazardous materials</p> <p><u>Decommissioning:</u> Drain/isolate fluid systems Control radioactive/chemical contamination Drain/isolate utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria</p>	<p><i>Beryllium</i> <i>Chemicals</i> <i>SVM Holdup Measurement</i> <i>Radiological Surveys</i></p>	<p>Beryllium High levels of radiological contamination</p>	<p>PPE CBDPP Radiological Controls/ ALARA Principles</p>	<p>LLW, LLM</p>

SET NO.	SET DESCRIPTION	MAJOR ENDPOINTS	ADDITIONAL CHARACTERIZATION NEEDED	UNIQUE HAZARD ANALYSIS	HAZARD CONTROL	WASTE STREAM
79	<p>EQUIPMENT SET - Criticality Accident Alarm System (CAAS) and Plenum Deluge System</p> <p><i>Beryllium:</i> There is no indication of Be contamination on the components of this SET that will be removed during decommissioning. Be surveys will be required to "free release" the system component.</p> <p><i>Chemicals:</i> The water from the deluge valve to the supply will need to be drained. The system is "dry" within the plenum.</p> <p><i>Radiological Contamination:</i> Radiological contamination is not encountered when the neutron detectors are replaced or serviced.</p>	<p><u>Deactivation:</u> Control/fix contamination Drain/dispose of solutions Remove/dispose of loose hazardous materials</p> <p><u>Decommissioning:</u> Drain/isolate fluid systems Control radioactive/chemical contamination Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria</p>	<p><i>Beryllium</i></p> <p><i>Chemicals</i></p> <p><i>Radiological Surveys</i></p>	None	PPE	LLW, SAN
80	<p>EQUIPMENT SET - Plenums and associated ductwork for Zone 1 ventilation</p> <p><i>Beryllium:</i> The ducting from the GBs and hoods that processed Be will be considered Be contaminated.</p> <p><i>Chemicals:</i> DOP on the filters from testing.</p> <p><i>SNM Holdup:</i> The plenums are scanned on an annual basis to determine the amount of holdup present. The ducting was scanned in 1990 to determine the amount of SNM within the ducting. SNM has been removed from the molten salts duct. SNM holdup will be reduced to the safeguards termination limits during deactivation.</p> <p><i>Radiological Contamination:</i> The plenums are High Contamination Areas. The plenums and ducting contain gram amounts of Pu and are therefore contaminated in excess of 10⁶ dpm.</p>	<p><u>Deactivation:</u> Control/fix contamination Remove/dispose of loose combustibles Drain/dispose of solutions Remove/dispose of loose equipment Remove/dispose of loose hazardous materials</p> <p><u>Decommissioning:</u> Control radioactive/chemical contamination Drain/isolate/remove/dispose utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria</p>	<p><i>Beryllium</i></p> <p><i>SNM Holdup Measurement</i></p> <p><i>Radiological Surveys</i></p>	<p>Beryllium</p> <p>High levels of radiological contamination</p>	<p>PPE</p> <p>CBDPP</p> <p>Radiological Controls/ ALARA Principles</p>	LLW, TRU

SET NO.	SET DESCRIPTION	MAJOR ENDPOINTS	ADDITIONAL CHARACTERIZATION NEEDED	UNIQUE HAZARD ANALYSIS	HAZARD CONTROL	WASTE STREAM
81	<p>EQUIPMENT SET - Miscellaneous external items (including UST, AST, cargo containers, exterior piping, and electrical transformers)</p> <p><i>Asbestos:</i> Much of the steam condensate line insulation has been replaced with non-asbestos insulation. Any insulation that has not been replaced or installed recently will be managed as asbestos unless sample results indicate the insulation is non-asbestos.</p> <p><i>Beryllium:</i> The process waste lines may have low levels of Be contamination (see tank SETs 7, 26 and 69). This possible Be contamination is not a safety concern due to the suspension in liquid and the controls that are necessary for radiological contamination.</p> <p><i>Chemicals:</i> There are chemical containers that will be removed from cargo containers during deactivation. Any residual liquids in the piping will be removed prior to decommissioning. The dielectric fluid in the transformers will be sampled and removed prior to removal of the transformer carcasses.</p> <p><i>Lead & Other Heavy Metals:</i> Sodium vapor lights contain lead and mercury. There are treatability wastes in cargo containers that must be disposed of prior to decommissioning.</p> <p><i>SNM Holdup:</i> Not determined. The contaminated piping was used to ship process waste. Based on the removal of the trichloroethane piping in Rooms 141 and 430, there is no detectable holdup in the piping. The piping will require scanning prior to packaging to comply with the current criticality controls for waste drums and boxes.</p> <p><i>Radiological Contamination:</i> The process waste lines are internally contaminated. The other piping should not be contaminated. The cargo carriers, their contents, and the transformer carcasses will be surveyed for "free release" also.</p>	<p>Deactivation: Remove/dispose of loose combustibles Drain/dispose of solutions Remove/dispose of loose equipment Remove/dispose of loose hazardous materials</p> <p><u>Decommissioning:</u> Control radioactive/chemical contamination Drain/isolate utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria</p>	<p><i>Asbestos</i></p> <p><i>Beryllium</i></p> <p><i>Chemicals</i></p> <p><i>Lead & Other Heavy Metals: Sludge</i></p> <p><i>SNM Holdup Measurement</i></p> <p><i>Radiological Surveys</i></p>	Beryllium	<p>PPE</p> <p>CBDPP</p>	<p>LLW, LLM, HAZ, SAN</p>

SET NO.	SET DESCRIPTION	MAJOR ENDPOINTS	ADDITIONAL CHARACTERIZATION NEEDED	UNIQUE HAZARD ANALYSIS	HAZARD CONTROL	WASTE STREAM
82	<p>BUILDING STRUCTURE SET - Building Shell (1st and 2nd Floors) includes Docks 2 through 6</p> <p><i>Asbestos:</i> The walls contain several asbestos features. Much of the original exterior walls are covered with transite panels. Where asbestos insulated pipes pass through the 2nd floor, asbestos insulation may be present in the pipe section remaining in the floor. The mortar filling contained in some cement blocks might contain asbestos.</p> <p><i>Beryllium:</i> Be surveys will be needed for the building structure once the equipment is removed. The areas that have known or suspected contamination can be found on the Be map in the Reconnaissance Level Characterization Report or in the individual SET descriptions in this appendix.</p> <p><i>Chemicals:</i> The wall along column line L between Columns 7 and 9 is potentially contaminated with carbon tetrachloride and oil. In the 1960s prior to the 1969 fire, waste machine coolant mixed with carbon tetrachloride was sprayed onto the wall when drums of the liquid were overfilled. There are numerous other incidents where the same waste leaked onto the 1st floor in other areas of the building. Since the 1st floor will not be removed during decommissioning, these sites do not affect characterization of the waste generated during decommissioning.</p> <p><i>Lead & Other Heavy Metals:</i> The paint on the floor and walls may contain lead or other RCRA heavy metals. The concrete near the Kathabar units on the second floor is contaminated with Kathene. Kathene sludge contains chromium, cadmium and lead. The levels of these metals in the concrete have not been determined. Based on comments from a former NDT employee, the north, west, and east walls of Room 473 may contain lead "wool" within the concrete. The lead was added to increase the shielding provided by the walls.</p> <p><i>Radiological Contamination:</i> There is fixed contamination beneath the paint on the floor and building walls from the 1969 fire. It is assumed that the floor contamination levels are the same as those after the 1969 fire (i.e., a range of not detectable to $>10^6$ cpm).</p>	<p>Ensure that the following deactivation and decommissioning have been completed:</p> <p><u>Deactivation:</u> Control/fix contamination Remove/dispose of loose combustibles Drain/dispose of solutions Remove/dispose of loose equipment Remove/dispose of loose hazardous materials</p> <p><u>Decommissioning:</u> Drain/isolate fluid systems Control radioactive/chemical contamination Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria Remove/dispose of specified constituents Control air emissions</p> <p><u>Then:</u> Remove/dispose of building structure</p>	<p><i>Beryllium</i></p> <p><i>Lead & Other Heavy Metals:</i> Sludge</p> <p><i>Radiological Surveys</i></p>	<p>Beryllium</p> <p>High levels of radiological contamination</p> <p>Kathene</p>	<p>PPE</p> <p>CBDPP</p> <p>Radiological Controls/ ALARA Principles</p>	<p>LLW, TRU, LLM, HAZ, SAN</p>

Building 776/777 Closure Project
Decommissioning Operations Plan

Revision 0
October 18, 1999

SET NO.	SET DESCRIPTION	MAJOR ENDPOINTS	ADDITIONAL CHARACTERIZATION NEEDED	UNIQUE HAZARD ANALYSIS	HAZARD CONTROL	WASTE STREAM
83	<p>EQUIPMENT SET - SET 83 is broken into three parts: (1) Buildings 703, 713 (cooling tower) and 713A, (2) Zone 2 Plenums and Ductwork, (3) Remaining equipment in Building 776/777 (Supply Fans S1-S9, HP heads, air, N₂, sanitary drains, domestic water, electrical, UPS batteries (Room 230), LS/DW batteries, Rooms 230A, 231, 231A and 232A, fire systems). The overall SET has the same endpoints; the individual parts have different hazards and contaminants, as shown below.</p> <p>Asbestos: (1) The insulation on the piping and structure will be managed as asbestos waste unless sampling indicates otherwise. The baffles on the cooling tower may contain asbestos. (2) None. (3) The pipe insulation, ceiling tile and floor tile will be managed as asbestos waste unless sampling indicates otherwise.</p> <p>Beryllium: (1) None. (2) The ducting from the rooms with Be was handled will be considered Be contaminated. (3) None.</p> <p>Chemicals: (1) There are containers of oil and Nalco 2826 that will be removed from Building 702 during deactivation. Liquids from the motors, pumps and piping will be drained also. (2) There is DOP on the filters from testing. (3) The electrolyte in the batteries is acidic.</p> <p>Lead & Other Heavy Metals: (1) The fluorescent bulbs contain mercury (Building 703) and will be managed as hazardous waste. (2) None (3) The fluorescent bulbs contain mercury. There is lead within the LS/DW and UPS batteries. Incandescent bulbs can contain lead.</p> <p>PCBs: (1) A PCB determination of ballasts will be made when the ballasts are removed. (2) None (3) A PCB determination of ballasts will be made when the ballasts are removed. The switchgear will be inspected for PCB capacitors when it is deactivated.</p> <p>Radioactive Sources: (1) None (2) None (3) The sources in the air monitors will be removed with the air monitors.</p> <p>Radiological Contamination: (1) There is no indication of radiological contamination in these buildings. (2) The plenums are High Contamination Areas. Several room exhaust ducts on the 1st floor are marked "contains fixed contamination". (3) The remaining equipment may be contaminated since the SET is contained within a Radiation Buffer Area and Contamination Area. Unless the equipment is unpainted and 100% surveyable, the equipment will be disposed of as LLW.</p>	<p><u>Deactivation:</u> Control/fix contamination Remove/dispose of loose combustibles Drain/dispose of solutions Remove/dispose of loose equipment</p> <p><u>Decommissioning:</u> Drain/isolate fluid systems Control radioactive/chemical contamination Drain/isolate/remove/dispose of utility systems Remove/dispose of equipment & associated piping/conduit Package to waste acceptance criteria Remove/dispose specified constituents Control air emissions Remove/dispose of structures Close subsurface volumes</p>	<p><i>Beryllium</i> (2) <i>Chemicals</i> (1), (3) <i>PCBs</i> (3) <i>Radiological Surveys</i> (1), (2), (3)</p>	<p>Beryllium High levels of radiological contamination</p>	<p>PPE CBDPP Radiological Controls/ ALARA Principles</p>	<p>LLW, LLM</p>

SET NO.	SET DESCRIPTION	MAJOR ENDPOINTS	ADDITIONAL CHARACTERIZATION NEEDED	UNIQUE HAZARD ANALYSIS	HAZARD CONTROL	WASTE STREAM
84	<p>EQUIPMENT SET - Floors and below-grade features filled with concrete, including equipment from the 1969 fire cleanup</p> <p><i>Asbestos:</i> It is assumed that the insulation on the buried autoclave contains asbestos.</p> <p><i>Chemicals:</i> There were numerous incidents in Rooms 127, 131, and 134E where oil/carbon tetrachloride mixture leaked to the floor. This mixture was cleaned in accordance with decontamination practices or procedures in place at the time of the spill. The stairwells, mill/press pits and the Hydroform equipment room floor were most likely contaminated with this mixture at various times. There is no information on the presence or absence of leakage from the paint trap. Trichloroethylene was used for cleaning items processed in the autoclaves.</p> <p><i>Lead & Other Heavy Metals:</i> The paint on the floor and walls may contain lead or other RCRA heavy metals.</p> <p><i>SNM Holdup:</i> Not yet determined. Buried equipment used to process SNM (GBs, rolling mill rolls) may contain SNM.</p> <p><i>Radiological:</i> The depth of the contamination into the floor has not been established. The contaminated fire water from the 1969 fire may have penetrated the floors at the expansion joints.</p>	<p>Decommissioning:</p> <p>Area A, Stairwells (5) Under Main Floor Slab Control radioactive contamination Remove/ dispose of cement Package to waste acceptance criteria Control air emissions</p> <p>Area B, Room 127, Maintenance Area Control radioactive contamination Remove/ dispose of cement and metal panels Package to waste acceptance criteria Control air emissions</p> <p>Area C, Four-High Rolling Mill Pit Control radioactive contamination Remove/ dispose of cement and equipment Package to waste acceptance criteria Control air emissions</p> <p>Area D, Marform Press Pit Control radioactive contamination Remove/ dispose of cement Package to waste acceptance criteria Control air emissions</p> <p>Area E, Hydroform Press Room Control radioactive contamination Remove/ dispose of cement and equipment Package to waste acceptance criteria Control air emissions</p> <p>Area F, Autoclave Equipment Pit Control radioactive contamination Remove/ dispose of cement Package to waste acceptance criteria Control air emissions</p> <p>Area G, Washing Machine Drain Pit Control radioactive contamination Remove/ dispose of cement and equipment Package to waste acceptance criteria Control air emissions</p> <p>Area H, Paint Trap Control radioactive contamination Remove/ dispose of cement and equipment Package to waste acceptance criteria Control air emissions</p>	<p><i>Chemicals:</i> To be determined.</p> <p><i>SNM Holdup:</i> To be determined on a case by case basis.</p> <p><i>Radiological Surveys</i></p>	<p>High levels of radiological contamination</p>	<p>PPE</p> <p>Radiological Controls/ ALARA Principles</p>	<p>TRU, TRM, LLW</p>

This page intentionally left blank

Appendix B

Ground Water Action Levels

(source: RFCA, Attachment 5)

Analyte	CAS No.	Tier 1- 100 x MCLs (mg/L)	Tier 2- MCLs (mg/L)
Acenaphthene (V)	83-32-9	2.19E+02	2.19E+00
Acetone (V)	67-64-1	3.65E+02	3.65E+00
Aldrin	309-00-2	5.00E-04	5.00E-06
Aluminum	7429-90-5	1.06E+04	1.06E+02
Anthracene (V)	120-12-7	1.10E+03	1.10E+01
Antimony	7440-38-0	6.00E-01	6.00E-03
Aroclor-1016	12674-11-2	5.00E-02	5.00E-04
Aroclor-1221	11104-28-2	5.00E-02	5.00E-04
Aroclor-1232	11141-16-5	5.00E-02	5.00E-04
Aroclor-1242	53469-21-9	5.00E-02	5.00E-04
Aroclor-1248	12672-29-6	5.00E-02	5.00E-04
Aroclor-1254	11097-69-1	5.00E-02	5.00E-04
Aroclor-1260	11096-82-5	5.00E-02	5.00E-04
Arsenic	7440-38-2	5.00E+00	5.00E-02
Barium	7440-39-3	2.00E+02	2.00E+00
Benzene (V)	71-43-2	5.00E-01	5.00E-03
alpha-BHC	319-84-6	1.35E-03	1.35E-05
beta-BHC	319-85-7	4.72E-03	4.72E-05
gamma-BHC (Lindane)	58-89-9	2.00E-02	2.00E-04
Benzo(a)anthracene	56-55-3	1.16E-02	1.16E-04
Benzo(a)pyrene	50-32-8	2.00E-02	2.00E-04
Benzo(b)fluoranthene	205-99-2	1.16E-02	1.16E-04
Benzo(k)fluoranthene	207-08-9	1.16E-01	1.16E-03
Benzoic Acid	65-85-0	1.46E+04	1.46E+02
Benzyl Alcohol	100-51-6	1.10E+03	1.10E+01
Beryllium	7440-41-7	4.00E-01	4.00E-03
bis(2-Chloroethyl)ether (V)	111-44-4	1.63E-03	1.63E-05
bis(2-Chloroisopropyl)ether (V)	108-60-1	4.22E-02	4.22E-04
bis(2-Ethylhexyl)phthalate	117-81-7	6.00E-01	6.00E-03
Bromodichloromethane (V)	75-27-4	1.00E+01	1.00E-01
Bromoform (V)	75-25-2	1.00E+01	1.00E-01
Bromomethane (V)	74-83-9	1.09E+00	1.09E-02
2-Butanone (V)	78-93-3	2.47E+02	2.47E+00
Butylbenzylphthalate	85-68-7	7.30E+02	7.30E+00
Cadmium	7440-43-9	5.00E-01	5.00E-03
Carbon disulfide (V)	75-15-0	2.76E+00	2.76E-02
Carbon tetrachloride (V)	56-23-5	5.00E-01	5.00E-03
alpha-Chlordane	5103-71-9	2.00E-01	2.00E-03
beta-Chlordane	5103-74-2	2.00E-01	2.00E-03
gamma-Chlordane	5103-74-2	2.00E-01	2.00E-03
4-Chloroaniline	106-47-8	1.46E+01	1.46E-01
Chlorobenzene (V)	108-90-7	1.00E+01	1.00E-01
Chloroethane (V)	75-00-3	2.78E+03	2.78E+01
Chloroform (V)	67-66-3	1.00E+01	1.00E-01
Chloromethane (V)	74-87-3	2.32E-01	2.32E-03
2-Chloronaphthalene (V)	91-58-7	2.92E+02	2.92E+00
2-Chlorophenol (V)	95-57-8	1.83E+01	1.83E-01
Chromium	7440-47-3	1.00E+01	1.00E-01
Chrysene	218-01-9	1.16E+00	1.16E-02
Cobalt	7440-48-4	2.19E+02	2.19E+00

Appendix B
Ground Water Action Levels
(source: RFCA, Attachment 5)

Analyte	CAS No.	Tier 1- 100 x MCLs (mg/L)	Tier 2- MCLs (mg/L)
Copper	7440-50-8	1.30E+02	1.30E+00
Cyanide	57-12-5	2.00E+01	2.00E-01
4,4-DDD	72-54-8	3.54E-02	3.54E-04
4,4-DDE	72-55-9	2.50E-02	2.50E-04
4,4-DDT	50-29-3	2.50E-02	2.50E-04
Dalapon	75-99-0	2.00E+01	2.00E-01
Dibenz(a,h)anthracene	53-70-3	1.16E-03	1.16E-05
Dibromochloromethane	124-48-1	1.01E-01	1.01E-03
1,2-Dibromo-3-chloropropane	96-12-8	2.00E-02	2.00E-04
Di-n-butylphthalate	84-74-0	3.65E+02	3.65E+00
2,4-D	94-75-7	7.00E+00	7.00E-02
1,2-Dichlorobenzene (V)	95-50-1	6.00E+01	6.00E-01
1,3-Dichlorobenzene (V)	541-73-1	6.00E+01	6.00E-01
1,4-Dichlorobenzene (V)	106-46-7	7.50E+00	7.50E-02
3,3-Dichlorobenzidine	91-94-1	1.89E-02	1.89E-04
1,1-Dichloroethane (V)	107-06-2	1.01E+02	1.01E+00
1,2-Dichloroethane (V)	107-06-2	5.00E-01	5.00E-03
1,1-Dichloroethene (V)	540-59-0	7.00E-01	7.00E-03
1,2-Dichloroethene (total)(V)	540-59-0	7.00E+00	7.00E-02
2,4-Dichlorophenol	120-83-2	1.10E+01	1.10E-01
1,2-Dichloropropane (V)	78-87-5	5.00E-01	5.00E-03
cis-1,3-Dichloropropene (V)	1006-01-5	1.27E-02	1.27E-04
trans-1,3-Dichloropropene (V)	10061-02-6	1.27E-02	1.27E-04
Dieldrin	60-57-1	5.31E-04	5.31E-06
Diethylphthalate	84-66-2	2.92E+03	2.92E+01
2,4-Dimethylphenol (V)	105-67-9	7.30E+01	7.30E-01
Dimethylphthalate	131-11-3	3.65E+04	3.65E+02
2,4-Dinitrophenol	51-28-5	7.30E+00	7.30E-02
2,4-Dinitrotoluene	121-14-2	7.30E+00	7.30E-02
2,6-Dinitrotoluene	606-20-2	1.25E-02	1.25E-04
Di-n-octylphthalate	117-84-0	7.30E+01	7.30E-01
Endosulfan I	959-98-8	2.19E+01	2.19E-01
Endosulfan II	33213-65-9	2.19E+01	2.19E-01
Endosulfan sulfate	1031-07-8	2.19E+01	2.19E-01
Endosulfan (technical)	115-29-7	2.19E+01	2.19E-01
Endrin (technical)	72-26-8	2.00E-01	2.00E-03
Ethylbenzene (V)	100-41-4	7.00E+01	7.00E-01
Fluoranthene	206-44-0	1.46E+02	1.46E+00
Fluorene (V)	86-73-7	1.46E+02	1.46E+00
Fluoride	16984-48-8	4.00E+02	4.00E+00
Glyphosate	1071-83-6	7.00E+01	7.00E-01
Heptachlor	76-44-8	4.00E-02	4.00E-04
Heptachlor epoxide	1024-57-3	2.00E-02	2.00E-04
Hexachlorobenzene	118-74-1	1.00E-01	1.00E-03
Hexachlorobutadiene	87-68-3	1.09E-01	1.09E-03
Hexachlorocyclopentadiene	77-47-4	5.00E+00	5.00E-02
Hexachloroethane	67-72-1	6.07E-01	6.07E-03
Indeno(1,2,3-cd)pyrene	193-39-5	1.16E-02	1.16E-04
Isophorone	78-59-1	8.95E+00	8.95E-02
Lithium	7439-93-2	7.30E+01	7.30E-01

Appendix B

Ground Water Action Levels

(source: RFCA, Attachment 5)

Analyte	CAS No.	Tier 1- 100 x MCLs (mg/L)	Tier 2- MCLs (mg/L)
Manganese	7439-96-5	1.83E+01	1.83E-01
Mercury	7439-97-6	2.00E-01	2.00E-03
Methoxychlor	72-43-5	4.00E+00	4.00E-02
Methylene chloride (V)	75-09-2	5.00E-01	5.00E-03
4-Methyl-2-pentanone (V)	108-10-1	2.03E+01	2.03E-01
2-Methylphenol	95-48-7	1.83E+02	1.83E+00
Molybdenum	7439-98-7	1.83E+01	1.83E-01
Naphthalene (V)	91-20-3	1.46E+02	1.46E+00
Nickel	7440-02-0	1.00E+01	1.00E-01
Nitrate (MCL as N)	1-005	1.00E+03	1.00E+01
Nitrite (MCL as N)	1-005	1.00E+02	1.00E+00
Nitrobenzene (V)	98-95-3	4.20E-01	4.20E-03
n-Nitrosodiphenylamine (V)	86-30-6	1.73E+00	1.73E-02
n-Nitrosodipropylamine	621-64-7	1.21E-03	1.21E-05
Pentachlorophenol	87-86-5	1.00E-01	1.00E-03
Phenol	108-95-2	2.19E+03	2.19E+01
Pyrene	129-00-0	1.10E+02	1.10E+00
Selenium	7782-49-2	5.00E+00	5.00E-02
Silver	7440-22-4	1.83E+01	1.83E-01
Strontium	7440-24-6	2.19E+03	2.19E+01
Styrene (V)	100-42-5	1.00E+01	1.00E-01
Sulfate	14808-79-8	5.00E+04*	5.00E+02*
1,1,2,2-Tetrachloroethane (V)	79-34-5	8.95E-03	8.95E-05
Tetrachloroethene (V)	127-18-4	5.00E-01	5.00E-03
Thallium	7440-28-0	2.00E-01	2.00E-03
Tin	7440-31-5	2.19E+03	2.19E+01
Toluene (V)	108-88-3	1.00E+02	1.00E+00
Toxaphene	8001-35-2	3.00E-01	3.00E-03
1,2,4-Trichlorobenzene (V)	120-82-1	7.00E+00	7.00E-02
1,1,1-Trichloroethane (V)	71-55-6	2.00E+01	2.00E-01
1,1,2-Trichloroethane (V)	79-00-5	5.00E-01	5.00E-03
Trichloroethene (V)	79-01-6	5.00E-01	5.00E-03
2,4,5-Trichlorophenol	95-95-4	5.00E+00	5.00E-02
2,4,6-Trichlorophenol	88-06-2	7.73E-01	7.73E-03
Vanadium	7440-62-2	2.56E+01	2.56E-01
Vinyl acetate	108-05-4	3.65E+03	3.65E+01
Vinyl chloride (V)	75-01-4	2.00E-01	2.00E-03
Xylene (total)(V)	1330-20-7	1.00E+03	1.00E+01
Zinc	7440-66-6	1.10E+03	1.10E+01

This page intentionally left blank.

Appendix C
Building 776/777 Closure Project
Administrative Record

DOCUMENT	DRIVER
Administrative Record Listing	RFCA, ¶s 283-285; CERCLA, 40 CFR 300.800 <i>et seq.</i>
Joint Scoping Meeting Minutes/Disposition	FDPM, Section 3.3.7.2
Reconnaissance Level Characterization Report (RLCR)	RFCA, ¶120(g)
DRAFT Decommissioning Operations Plan (DOP)	RFCA, ¶107
DOP Responsiveness Summary	RFCA, ¶107
FINAL DOP	RFCA, ¶107
Pre-Demolition Survey	DPP, Sections 3.3.10 and 3.3.13; CERCLA, , 40 CFR 300.800 <i>et seq.</i>
Demolition Permit	FDPM, Section 6.3.4
Notification to CDPHE prior to demolition (required for asbestos abatement activities)	DOE Order 440.1, OSHA, 29 CFR 1910 <i>et seq.</i>
Air Pollutant Emission Notification (APEN), (required if 2000 lbs. dust/VOC emissions will be exceeded in a single event)	Colorado Air Quality Control Regulation No. 3
Post-Demolition Survey	CERCLA, 40 CFR 300.800 <i>et seq.</i> ; DDCP,
Decommissioning Final Closeout Report	RFCA, ¶118

This page intentionally left blank.

Appendix D

Building 776/777 Closure Project Schedule

This page intentionally left blank

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish	Total Float	FY99	FY00	FY01	FY02	FY03	FY04	FY05
036 WAD 035 776/777 Cluster Project												
1.1.06.12.01.776/777 CLUSTER LANDLORD FUNCTIONS												
D5BEGWPD35	Start WPD 35	0	01OCT98		0							
1.1.06.12.01.01.776/777 CLUSTER COMPLIANCE SURVEILLANCE												
D5F0199A00	B776/777 Compliance Surveillance - Authorization	254	01OCT98	30SEP99	1							
D5F0199E00	B776/777 Compliance Surveillance - Environmental	254	01OCT98	30SEP99	1							
D5F0199M00	B776/777 Compliance Surveillance - Other	254	01OCT98	30SEP99	1							
D5F0199M02	Glove Inspection/Changes B776/777 FY-99 20% of TTL	94	16NOV98*	31MAR99	129							
D5F0100A00	B776/777 Compliance Surveillance - Authorization	254	01OCT99	29SEP00	1							
D5F0100E00	B776/777 Compliance Surveillance - Environmental	254	01OCT99	29SEP00	1							
D5F0100M00	B776/777 Compliance Surveillance - Other	254	01OCT99	29SEP00	1							
D5F0101A00	B776/777 Compliance Surveillance - Authorization	253	02OCT00	28SEP01	1							
D5F0101E00	B776/777 Compliance Surveillance - Environmental	253	02OCT00	28SEP01	1							
D5F0101M00	B776/777 Compliance Surveillance - Other	253	02OCT00	28SEP01	1							
D5F0102A00	B776/777 Landlord Compliance Surveillance FY-02	254	01OCT01	30SEP02	1							
D5F0102E00	B776/777 Landlord - Environmental Surveill FY-02	254	01OCT01	30SEP02	1							
D5F0102M00	B776/777 Landlord - Other Surveillance FY-02	254	01OCT01	30SEP02	1							
D5F0103A00	B776/777 Landlord - Compliance Surveillance FY03	254	01OCT02	30SEP03	1							
D5F0103E00	B776/777 Landlord - Environm'l Surveill FY-03	254	01OCT02	30SEP03	1							
D5F0103M00	B776/777 Landlord - Other Surveillances FY-03	254	01OCT02	30SEP03	1							
1.1.06.12.01.02.776/777 CLUSTER MAINTENANCE												
D5F0299M05	Pressure Safety JCO (Major IWCP)	63	01OCT98	31DEC98	1							
D5F0299C00	Maintenance - Corrective	254	01OCT98	30SEP99	1							
D5F0299M00	B776/777 Landlord - Major IWCP Maint FY-99	254	01OCT98	30SEP99	1							
D5F0299P00	B776/777 Landlord - Preventative Maint FY-99	254	01OCT98	30SEP99	1							
D5F0299R00	B776/777 Landlord - Routine Maintenance FY-99	254	01OCT98	30SEP99	1							
D5F0200C00	B776/777 Landlord - Corrective Maintenance FY-00	254	01OCT99	29SEP00	1							
D5F0200M00	B776/777 Landlord - Major IWCP Maint FY-00	254	01OCT99	29SEP00	1							

Sheet 1 of 33

KAISER-HILL COMPANY
CLOSURE PROJECT BASELINE SCHEDULE
BUILDING 776/777 CLOSURE PROJECT

BL05:W035

Project Start	01OCT97	Early Bar
Project Finish	23SEP05	Progress Bar
Data Date	01OCT98	Critical Activity
Run Date	11OCT99	

CLOSURE KAISER-HILL

197

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish	Total Float	FY99	FY00	FY01	FY02	FY03	FY04	FY05
D5F0200P00	B7767777 Landlord - Preventative Maint FY-00	254	01OCT99	29SEP00	1							
D5F0200R00	B7767777 Landlord - Routine Maintenance FY-00	254	01OCT99	29SEP00	1							
D5F0201C00	B7767777 Landlord - Corrective Maintenance FY-01	253	02OCT00	28SEP01	1							
D5F0201M00	B7767777 Landlord - Major IWCP Maintenance FY-01	253	02OCT00	28SEP01	1							
D5F0201P00	B7767777 Landlord - Preventative Maint FY-01	253	02OCT00	28SEP01	1							
D5F0201R00	B7767777 Landlord - Routine Maintenance FY-01	253	02OCT00	28SEP01	1							
D5F0202C00	B7767777 Landlord - Corrective Maintenance FY-02	254	01OCT01	30SEP02	1							
D5F0202P00	B7767777 Landlord - Preventative Maint FY-02	254	01OCT01	30SEP02	1							
D5F0202R00	B7767777 Landlord - Routine Maintenance FY-02	254	01OCT01	30SEP02	1							
D5F0203C00	B7767777 Landlord - Corrective Maintenance FY-03	254	01OCT02	30SEP03	1							
D5F0203P00	B7767777 Landlord - Preventative Maint FY-03	254	01OCT02	30SEP03	1							
D5F0203R00	B7767777 Landlord - Routine Maintenance FY-03	254	01OCT02	30SEP03	1							
1.1.06.12.01.03 7767777 CLUSTER OPERATIONS TECH SUPPORT												
D5F0399T00	B7767777 Landlord - Operations Tech Spt FY-99	254	01OCT98	30SEP99	1							
D5F0300T00	B7767777 Landlord - Operations Tech Spt FY-00	254	01OCT99	29SEP00	1							
D5F0301T00	B7767777 Landlord - Operations Tech Spt FY-01	253	02OCT00	28SEP01	1							
D5F0302T00	B7767777 Landlord - Operations Tech Spt FY-02	228	01OCT01	30SEP02	1							
D5F0303T00	B7767777 Landlord - Operations Tech Spt FY-03	228	01OCT02	30SEP03	1							
1.1.06.12.01.04 7767777 CLUSTER OPERATIONS MANAGEMENT												
D5F0499M00	B7767777 Landlord - Operations Management FY-99	254	01OCT98	30SEP99	1							
D5F0400M00	B7767777 Landlord - Operations Management FY-00	254	01OCT99	29SEP00	1							
D5F0400M10	FY-00 Personnel Relo & Property Disposition	254	01OCT99	29SEP00	1							
D5FDELE283	Complete B7767777 Nuclear Operations	0		30MAR00	1							
D5F0401M00	B7767777 Landlord - Operations Management FY-01	253	02OCT00	28SEP01	1							
D5F0401M10	FY-01 Personnel Relo & Property Disposition	253	02OCT00	28SEP01	1							
D5F0402M10	FY-02 Personnel Relo & Property Disposition	254	01OCT01	30SEP02	1							
D5F0402M00	B7767777 Landlord - Operations Management FY-02	254	01OCT01	30SEP02	1							
D5F0403M10	FY-03 Personnel Relo & Property Disposition	254	01OCT02	30SEP03	1							

Sheet 2 of 33

KAISER-HILL COMPANY
CLOSURE PROJECT BASELINE SCHEDULE
BUILDING 776777 CLOSURE PROJECT

BLOS:W035



Project Start: 01OCT97
Project Finish: 23SEP05
Date Date: 01OCT98
Run Date: 11OCT99

© Primavera Systems, Inc.

CLOSURE KAISER-HILL
2006 198
ROCKY MOUNTAIN CLOSURE PROJECT

18

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish	Total Float	FY99					FY00					FY01					FY02					FY03					FY04					FY05				
D5F0403NG0	B776777 Landlord - Operations Management FY-03	254	01OCT02	30SEP03	1																																			
D5FPROPERT	B776777 Comp Personnel Rel'd & Property Dispn	0		30SEP03	63																																			
1.1.06.12.01.05 AUTH BASIS DEV AND IMPL B776777																																								
D5F0599N91	A/B Imp Freeze Protection Program (DF)	101	01OCT98	15OCT98	156																																			
D5F0599N30	A/B Imp Training Program (GC)	24	01OCT98	06NOV98	55																																			
D5F0599N40	A/B Imp Organization and Management (DN)	24	01OCT98	06NOV98	103																																			
D5F0599N35	A/B Imp - Emergency Preparedness Program (WT)	24	01OCT98	06NOV98	107																																			
D5F0599N90	A/B Imp Hazardous Mat Protection Program (JJW)	24	01OCT98	06NOV98	112																																			
D5F0599N10	A/B Imp General Applications (JS)	24	01OCT98	06NOV98	126																																			
D5F0599N20	A/B Imp Criticality Safety Program (RS)	24	01OCT98	06NOV98	127																																			
D5F0599N15	A/B Imp Radiation Protection Program (EB)	24	01OCT98	06NOV98	181																																			
D5F0599N80	A/B Imp BIO Maintenance (AD)	24	01OCT98	06NOV98	181																																			
D5F0599N00	B776777 BIO Approval Activities (REV 1)	28	01OCT98	12NOV98	177																																			
D5F0599N25	A/B Imp Inventory Control Program (TT)	38	01OCT98	02DEC98	103																																			
D5F0599N45	A/B Imp Fire Protection Program (BM)	50	01OCT98	21DEC98	110																																			
D5F0599N92	A/B Imp Design Features (TBD1)	110	01OCT98	26MAR99	0																																			
D5F0599NA5	A/B Imp Seal Cable Hole	113	01OCT98	31MAR99	92																																			
D5F0599NA6	A/B Imp Fire Retardant Coating	113	01OCT98	31MAR99	92																																			
D5F0599NA7	A/B Imp - Proof File Development and Maint (MJS)	150	01OCT98	27MAY99	55																																			
D5F0599N05	A/B Imp - Project Management/Administrative Spt	228	01OCT98	30SEP99	0																																			
D5F0599N94	A/B Imp Quality Assurance (DF)	24	19OCT98	23NOV98	156																																			
D5F0599N96	A/B Imp BOA (CC)	50	02NOV98	21JAN99	0																																			
D5F0599N80	A/B Imp Forklift Operational Controls (WT)	10	09NOV98	23NOV98	107																																			
D5F0599N65	A/B Imp - WM, EP and Transport'n Programs (DN)	24	09NOV98	17DEC98	103																																			
D5F0599N50	A/B Imp Tank Controls (JJW)	24	09NOV98	17DEC98	112																																			
D5F0599N55	A/B Imp Compressed Gas Controls (RS)	24	09NOV98	17DEC98	127																																			
D5F0599NA1	A/B Imp - Criticality Safety System LCO/SER (JS)	40	09NOV98	14JAN99	126																																			

Sheet 3 of 33

BL05:W035



Project Start 01OCT97
Project Finish 23SEP05
Data Date 01OCT98
Run Date 11OCT98

© Primavera Systems, Inc.

KAISER-HILL COMPANY
CLOSURE PROJECT BASELINE SCHEDULE
BUILDING 776777 CLOSURE PROJECT

CLOSURE KAISER-HILL

199

ROCKY FLATS CLOSURE PROJECT

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish	Total Float	FY99	FY00	FY01	FY02	FY03	FY04	FY05
DSF0599NA4	AB Imp Training Activities (GC)	126	09NOV98	27MAY99	55							
DSF0599N02	B776777 New AB REV 1 Submitted to RFO	0		12NOV98	177							
DSF0599NB4	AB Imp Work Control Document SMP (DF)	15	24NOV98	18DEC98	156							
DSF0599NA3	AB Imp Compressed Air & Ntl Gas LCO/SER (WT)	40	24NOV98	29JAN99	107							
DSF0599NB7	AB Imp - Conduct of Operations Program (TT)	24	03DEC98	12JAN99	103							
DSF0599NB3	AB Imp Industrial Safety SMP (RS)	15	18DEC98	13JAN99	127							
DSF0599N75	AB Imp Configuration Management Program (DN)	24	18DEC98	27JAN99	103							
DSF0599N99	AB Imp Fire Suppression System LCO/SER (JIW)	45	18DEC98	01MAR99	112							
DSF0599N98	AB Imp HVAC System Act LCO/SER (BM)	45	22DEC98	03MAR99	110							
DSF0599NA2	AB Imp Electrical Power System LCO/SER (TT)	40	13JAN99	15MAR99	103							
DSF0599NB5	AB Imp Integrated Safety Management SMP (RS)	15	14JAN99	04FEB99	127							
DSF0599NB2	AB Imp Nuclear Safety SMP (JS)	15	15JAN99	08FEB99	126							
DSF0599NB1	AB Imp Occurrence Reporting SMP (DN)	15	28JAN99	18FEB99	103							
DSF0599NB6	AB Imp Maintenance Program (WT)	24	01FEB99	09MAR99	107							
DSF0599N70	AB Imp Work Control Program (DN)	15	22FEB99	15MAR99	103							
DSF0599NA8	AB Imp Final Corrective Actions	9	29MAR99	09APR99	0							
DSF0599NA9	AB Imp Management Assessment	9	12APR99	23APR99	0							
DSF0599ED1	Incorporate RFO Technical Direction into BIO	10	26APR99	07MAY99	0							
DSF0599NC1	AB Imp Management Assessment Corrective Actions	4	10MAY99	13MAY99	0							
DSF0599NC2	AB Imp Independent Validation Review	9	17MAY99	27MAY99	0							
DSF0599NC3	AB Imp IVR Corrective Actions	62	28MAY99	25AUG99	0							
DSF0599NC3	AB Imp IVR Corrective Actions	0		25AUG99*	0							
DSF0599NC1	B776777 AB Implementation Complete	25	26AUG99	30SEP99	1							
DSF0599NC4	AB Imp Revise BIO to Include D&D, Submit to DOE	254	01OCT99	29SEP00	1							
DSF0500AB0	B776777 Landlord - AB Maintenance FY-00	253	02OCT00	28SEP01	1							
DSF0501A00	B776777 Landlord - AB Maintenance FY-01	254	01OCT01	30SEP02	1							
DSF0502RM0	B776777 Landlord - AB Maintenance FY-02	254	01OCT02	30SEP03	1							
DSF0503RM0	B776777 Landlord - AB Maintenance FY-03											

Sheet 4 of 33

BLOS:W035

Project Start 01OCT97
Project Finish 23SEP05
Data Date 01OCT98
Run Date 11OCT99

Early Bar
Progress Bar
Critical Activity

KAISER-HILL COMPANY

CLOSURE PROJECT BASELINE SCHEDULE
BUILDING 776777 CLOSURE PROJECT

CLOSURE

KAISER-HILL

200

ROCKY FLATS CLOSURE PROJECT

© Primavera Systems, Inc.

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish	Total Float	FY99	FY00	FY01	FY02	FY03	FY04	FY05
1.1.06.12.02.776777 CLUSTER SNM REMOVAL OPERATIONS												
D5P9902020	FY-99 B776/7777 Remove Holdup Area 1	62	01OCT98	30DEC98	192							
D5P9902005	FY-99 B776/7777 SNM Holdup Removal Project Mgmt	254	01OCT98	30SEP99	1							
D5P9902030	FY-99 B776/7777 Remove Holdup Area 2	80	26OCT98*	21JAN99	177							
D5P9902040	FY-99 B776/7777 Remove Holdup Area 3	60	18NOV98*	15FEB99	160							
D5P9902050	FY-99 B776/7777 Remove Holdup Area 4	60	15DEC98*	10MAR99	143							
D5P9902150	FY-99 B776/7777 Holdup Mkt Xfer to B707	191	04JAN99*	30SEP99	1							
D5P9902080	FY-99 B776/7777 Remove Holdup Area 5	59	11JAN99*	01APR99	127							
D5P9902160	FY-99 B707 Thermal Stabilization of B776 Holdup	171	01FEB99	30SEP99	1							
D5P9902070	FY-99 B776/7777 Remove Holdup Area 6	60	02FEB99*	26APR99	110							
D5P9902080	FY-99 B776/7777 Remove Holdup Area 7	60	25FEB99*	19MAY99	93							
D5P9902090	FY-99 B776/7777 Remove Holdup Area 8	60	22MAR99*	14JUN99	76							
D5P9902190	FY-99 Holdup Removal Planning for FY-00 5 Areas	129	31MAR99*	30SEP99	0							
D5P999SCAN0	B776/7777 Holdup Scans/Drum Movement	110	09APR99*	30SEP99	58							
D5P9902100	FY-99 B776/7777 Remove Holdup Area 9	60	13APR99*	07JUL99	60							
D5P9902110	FY-99 B776/7777 Remove Holdup Area 10	60	06MAY99*	30JUL99	43							
D5P9902120	FY-99 B776/7777 Remove Holdup Area 11	61	27MAY99*	23AUG99	27							
D5P9902130	FY-99 B776/7777 Remove Holdup Area 12	60	21JUN99*	14SEP99	12							
D5P9902010	FY-99 B776/7777 SNM Verification Walkdowns	64	01JUL99*	30SEP99	0							
D5P9902140	FY-99 B776/7777 Remove Holdup Area 13	61	07JUL99*	30SEP99	0							
D5P9902M02	Complete Removal of Holdup from 13 Areas	0		30SEP99	0							
D5P0002010	FY-00 SNM Holdup Scans	62	01OCT99	30DEC99	65							
D5P0102005	B776/7777 MAA Closure Planning Activities	127	01OCT99	31MAR00	0							
D5P0002005	B776/7777 SNM Holdup Removal Project Mgmt	190	01OCT99	29JUN00	1							
D5HMLE306	FY01-T1 Holdup Removal Of Area ABV Safeguards	0		31MAR00	0							
D5P0102010	B776/7777 MAA Closure Execution Activities	42	03APR00	31MAY00	0							
D5HMLE311	FY01-T2 Close MAA in B776/7777 by 9/30/01	0		30JUN00	0							

Sheet 5 of 33

BL05.W005



Project Start 01OCT97
Project Finish 23SEP05
Data Date 01OCT98
Run Date 11OCT99

© Primavera Systems, Inc.

KAISER-HILL COMPANY
CLOSURE PROJECT BASELINE SCHEDULE
BUILDING 776777 CLOSURE PROJECT

CLOSURE KAISER-HILL

201

ROCKY FLATS CLOSURE PROJECT

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish	Total Float	FY99	FY00	FY01	FY02	FY03	FY04	FY05
DSPMLE323	Compl Rem'l of all B766/777 Holdup Requiring Slab	0		22MAY03	3							
1.1.06.12.03.02 776/777 CLUSTER DEACT PLAN AND PROJ MGMT												
D5HD298MD1	Review and Incorp RFFO Comments on DOP	83	01OCT98	29JAN99	1							
D5HD299P00	FY99 B776 Deact Planning and Project Management	254	01OCT98	30SEP99	0							
D5HD299MD2	Submit DOP for Public Review and Comment	0	01FEB99		1							
D5HD299MD3	Public Review Period and Inc Comments on DOP	171	01FEB99	30SEP99	1							
D5HMLE175	B776 DOP CDPHE Approved	0		30SEP99	1							
D5HD200P00	FY00 B776 Deact Planning and Project Management	254	01OCT99	29SEP00	1							
D5HD201P00	FY01 B776 Deact Planning and Project Management	253	02OCT00	28SEP01	1							
1.1.06.12.03.05 776/777 CLUSTER DEACT INITIAL PHY DEACT												
D5HD599G05	FY-99 Remove Oils/Solutions from GBs	126	01OCT98	31MAR99	0							
D5HD599R30	FY-99 Remove Used Oils	190	01OCT98	30JUN99	64							
D5HD599G01	FY-99 Remove Classified from Gloveboxes	254	01OCT98	30SEP99	0							
D5HD599G15	FY-99 Remove Misc Items from Gloveboxes	254	01OCT98	30SEP99	0							
D5HD599R35	FY-99 Rem 90% of Legacy Waste Drums	254	01OCT98	30SEP99	0							
D5HD599A01	FY-99 Disposition B776/777 Actuators	82	03DEC98	12APR99	0							
D5HD599R10	FY-99 Remove Classified from Rooms	191	04JAN99	30SEP99	0							
D5HD599R15	FY-99 Rem Microwave Samples from B701	191	04JAN99	30SEP99	0							
D5HD599T05	FY-99 Drain Tks T1 & T2 Rem Raschig Rings	191	04JAN99	30SEP99	0							
D5HD599T15	FY-99 Drain Vacuum Accumulators	191	04JAN99	30SEP99	0							
D5HD599T20	FY-99 Drain Low Level Oils Tks B776/777	191	04JAN99	30SEP99	0							
D5HD599RM1	Comp Rem'l of Combust liquid-bearing drums Rm134	0		15JAN99	0							
D5HD599GM1	Remove bulk oils from 7 gloveboxes Rms 131&134E	0		26FEB99	0							
D5HD599GM2	Comp Deactivation of 7 gloveboxes Rms 131 & 134E	0		31MAR99	0							
D5HCPM1902	FY-99 Complete B776/777 Actuator Disposition	0		30SEP99	0							
D5HD599IC3	FY-99 Comp Rem Misc Items from 8 GB Sets	0		30SEP99	0							
D5HD599EB1	Comp Rem Used Oils Cont'rs from Rm131 & Rm477	0		30SEP99	0							
D5HD599M22	B776/777 Cmpl Removal 90% Backlog Legacy Waste	0		30SEP99	0							

Project Start 01OCT97

Project Finish 23SEP98

Date Date 01OCT98

Run Date 11OCT98

BL05:W035

Early Bar

Progress Bar

Critical Activity

Sheet 6 of 33

KAISER-HILL COMPANY

CLOSURE PROJECT BASELINE SCHEDULE

BUILDING 776/777 CLOSURE PROJECT

CLOSURE KAISER-HILL 202

ROCKY FL CLOSURE PROJECT

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish	Total Float	FY99	FY00	FY01	FY02	FY03	FY04	FY05
D5HD599MS1	FY-99 Comp Draining LL Oil Tanks B776/7	0		30SEP99	0							
D5HD599MS4	FY-99 Comp Rem B701 MicroTreatm't Sples	0		30SEP99	0							
D5HD599MS7	FY-99 Comp Rem of oils/solutions 6 GBs	0		30SEP99	0							
D5HD599MS9	FY-99 Comp Draining/Raschig Rem Tks T1,T2	0		30SEP99	0							
D5HD599MSA	FY-99 Comp Vac'm Accumul drain to RCRA Sta	0		30SEP99	0							
D5HD599MSB	FY-99 Comp Rem/Disph'n Classif'd Items	0		30SEP99	0							
D5HD599PM1	FY-99 Comp Metric 1 PM 99/00-7 SR B776/7	0		30SEP99	0							
D5HD599PM2	FY-99 Comp Metric 2 PM 99/00-7 SR B776/7	0		30SEP99	0							
D5HD500G00	FY-00 B776/777 Glovebox Deactivation	127 01OCT99		31MAR00	0							
D5HD500R35	Remove Remaining Legacy Waste Drums	254 01OCT99		29SEP00	1							
D5HD599G16	FY-00 Remove Sources from Gloveboxes	254 01OCT99		29SEP00	1							
D5HD599R20	FY-00 Remove Sources from Rooms	254 01OCT99		29SEP00	1							
D5HD599R25	FY-00 Rem Loose Haz Materials from Rooms	254 01OCT99		29SEP00	1							
D5HD599T25	FY-00 Drain/Remove Trichlorethane Line	254 01OCT99		29SEP00	1							
D5HD500T05	FY-00 Drain SRV Tanks (SR3, 4 & 5)	87 29DEC99		28APR00	0							
D5HD500D10	FY-00 Drain Ancillary Piping Systems	192 03JAN00		29SEP00	1							
D5HD500R10	FY-00 B776/777 Room Deact and Equipment Removal	192 03JAN00		29SEP00	1							
D5HD500T10	Drn Tks T360,T370,T344 & T345 to RCRA Stable	192 03JAN00*		29SEP00	1							
D5HD500T15	FY-00 Drain FBI Pilot Tanks to RCRA Stable	192 03JAN00		29SEP00	1							
D5HD500MS2	FY-00 Clean out GBs in Sets 1,14,20,29,41 and 69	0		31MAR00	0							
D5HD500R15	FY-00 Rem Classified Telecom Sys/Docs from Rooms	127 03APR00*		29SEP00	1							
D5HD500M01	FY-00 Complete SF3,4&5 Tank Draining	0		28APR00	108							
D5HMILE320	FY00-T5 Drain Mixed Residue Tanks Complete	0		28SEP00	1							
D5HD500MS1	Comp Draining of Rem Tanks/Ancillary Eq to RCRA	0		29SEP00	1							
D5HD500MS8	FY00 Comp Rem Radioact Sources from GB&Rms	0		29SEP00	1							
D5HD599MS5	FY-00 Comp Rem of Loose Haz Mils from Rms	0		29SEP00	1							
D5HMILE499	B776/777 Complete Legacy Waste Removal	0		29SEP00	1							

BL05-W035



Project Start 01OCT97
Project Finish 23SEP05
Data Date 01OCT98
Run Date 11OCT98

© Primavera Systems, Inc.

Sheet 7 of 33

KAISER-HILL COMPANY
CLOSURE PROJECT BASELINE SCHEDULE
BUILDING 776/777 CLOSURE PROJECT

CLOSURE

KAISER-HILL

203

ROCKY FLATS CLOSURE PROJECT

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish	Total Float	FY99	FY00	FY01	FY02	FY03	FY04	FY05
D5HD500T20	FY-01 Drain to RCRA stable Equip in Rm 146	253	02OCT00	28SEP01	1							
D5HD501R05	FY-01 B776/7777 Room Deact and Equipment Removal	253	02OCT00*	28SEP01	1							
D5HD599R40	Clean out Advanced Size Reduction Area	97	13NOV00	02APR01	127							
D5FMILE392	B776/7777 Deactivation Complete	0		28SEP01	1							
D5HD500MS3	FY-01 Comp Rem of Loose Haz Mils, Rms	0		28SEP01	1							
D5HMLE465	Complete B776/7777 Excess Property Removal	0		30SEP03	1							
1.1.06.12.04.01 B776/7777 DECOM RM 125 DIMENSIONAL MET GB												
D5J0100MS1	B776/7777 Start Set 01 Decommissioning	0	03APR00*		320							
D5J0100010	B776/7777 Set 01 Planning and Engineering	78	03APR00	02AUG00	320							
D5J0100020	B776/7777 Set 01 Proj Specif Long Lead Procurem't	58	02OCT00*	03JAN01	284							
D5J0100030	B776/7777 Set 01 Isolation and Containment	26	04JAN01	13FEB01	284							
D5J0100040	B776/7777 Set 01 Dismantlement Tasks	64	14FEB01	23MAY01	284							
D5J0100MF1	B776/7777 Complete Set 01 Decommissioning	0		23MAY01	284							
1.1.06.12.04.02 B776/7777 DECOM SET 2-ROOM 126, 132, 133, 137B												
D5J0200MS1	B776/7777 Start Set 02 Decommissioning	0	19NOV01*		120							
D5J0200010	B776/7777 Set 02 Planning and Engineering	58	19NOV01	21FEB02	120							
D5J0200020	B776/7777 Set 02 Proj Specif Long Lead Procurem't	57	22FEB02	21MAY02	120							
D5J0200030	B776/7777 Set 02 Isolation and Containment	26	22MAY02	02JUL02	120							
D5J0200040	B776/7777 Set 02 Dismantlement Tasks	32	03JUL02	22AUG02	120							
D5J0200MF1	B776/7777 Complete Set 02 Decommissioning	0		22AUG02	120							
1.1.06.12.04.03 B776/7777 DECOM SET 3-HYDRAULIC OIL SYS,2ND												
D5J0300MS1	B776/7777 Start Set 03 Decommissioning	0	04OCT01*		107							
D5J0300010	B776/7777 Set 03 Planning and Engineering	58	04OCT01	08JAN02	107							
D5J0300020	B776/7777 Set 03 Proj Specif Long Lead Procurem't	57	09JAN02	05APR02	107							
D5J0300030	B776/7777 Set 03 Isolation and Containment	20	08APR02	07MAY02	107							
D5J0300040	B776/7777 Set 03 Dismantlement Tasks	80	08MAY02	12SEP02	107							
D5J0300MF1	B776/7777 Complete Set 03 Decommissioning	0		12SEP02	107							

Sheet 5 of 33

BL05:W035

Project Start	01OCT97
Project Finish	23SEP05
Date Date	01OCT98
Run Date	11OCT98

© Primavera Inc.

KAISER-HILL COMPANY
CLOSURE PROJECT BASELINE SCHEDULE
BUILDING 776/7777 CLOSURE PROJECT

CLOSURE
KAISER-HILL
2006
204
ROCKY MOUNTAIN CLOSURE PROJECT

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish	Total Float	FY99	FY00	FY01	FY02	FY03	FY04	FY05
1.1.06.12.04.04 B767777 DECOM SET 4-PART R131 DLINE & GBX												
D5J0400MS1	B776/777777 Start Set 04 Decommissioning	0	02OCT00*		0							
D5J0400010	B776/777777 Set 04 Planning and Engineering	58	02OCT00	03JAN01	0							
D5J0400020	B776/777777 Set 04 Proj Specif Long Lead Procurem't	65	04JAN01	16APR01	0							
D5J0400030	B776/777777 Set 04 Isolation and Containment	70	17MAY01	06SEP01	0							
D5J0400040	B776/777777 Set 04 Dismantlement Tasks	149	09OCT01*	04JUN02	0							
D5J04000MF1	B776/777777 Complete Set 04 Decommissioning	0		04JUN02	0							
1.1.06.12.04.05 B776777 DECOM SET 5-PART R131 DLINE & GBX												
D5J0500MS1	B776/777777 Start Set 05 Decommissioning	0	03APR00*		36							
D5J0500010	B776/777777 Set 05 Planning and Engineering	78	03APR00	02AUG00	36							
D5J0500020	B776/777777 Set 05 Proj Specif Long Lead Procurem't	58	02OCT00*	03JAN01	0							
D5J0500030	B776/777777 Set 05 Isolation and Containment	62	01NOV00	09FEB01	0							
D5J0500040	B776/777777 Set 05 Dismantlement Tasks	145	12FEB01	27SEP01	0							
D5J05000MF1	B776/777777 Complete Set 05 Decommissioning	0		27SEP01	0							
1.1.06.12.04.06 B776777 DECOM SET 6-PART R131 DLINE & GBX												
D5J0600MS1	B776/777777 Start Set 06 Decommissioning	0	02FEB00*		74							
D5J0600010	B776/777777 Set 06 Planning and Engineering	78	02FEB00	02JUN00	74							
D5J0600020	B776/777777 Set 06 Proj Specif Long Lead Procurem't	58	02OCT00*	03JAN01	0							
D5J0600030	B776/777777 Set 06 Isolation and Containment	84	01NOV00	15MAR01	0							
D5J0600040	B776/777777 Set 06 Dismantlement Tasks	167	09JAN01	27SEP01	0							
D5J06000MF1	B776/777777 Complete Set 06 Decommissioning	0		27SEP01	0							
1.1.06.12.04.07 B776777 DECOM SET 7-TANKS 1103, 1104, 1106.												
D5J0700MS1	B776/777777 Start Set 07 Decommissioning	0	04OCT99		0							
D5J0700020	B776/777777 Set 07 Proj Specif Long Lead Procurem't	11	04OCT99	19OCT99	26							
D5J0700022	B776/777777 Set 07 Mgmt Review Prep (1st Tank)	19	04OCT99	01NOV99	0							
D5J0700025	B776/777777 Set 07 Conduct Management Review	18	02NOV99	01DEC99	0							
D5J0700040	B776/777777 Set 07 Dismantlement Tasks	38	02DEC99	01FEB00	0							
D5J07000MF1	B776/777777 Complete Set 07 Decommissioning	0		01FEB00	96							

Project Start 01OCT97
Project Finish 23SEP05
Date Date 01OCT98
Run Date 11OCT99

Early Bar
Progress Bar
Critical Activity

BL05:W035

KAISER-HILL COMPANY
CLOSURE PROJECT BASELINE SCHEDULE
BUILDING 776777 CLOSURE PROJECT

Sheet 9 of 33

CLOSURE KAISER-HILL 205
ROCKY FLATS CLOSURE PROJECT

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish	Total Float	FY99	FY00	FY01	FY02	FY03	FY04	FY05
1.1.06.12.04.12 B7767-SET 12-FM 401, 403, 404, 405, 406												
D5J1200MS1	B7767777 Set 12 Decommissioning	0	01OCT01*		154							
D5J1200010	B7767777 Set 12 Planning and Engineering	58	01OCT01	02JAN02	154							
D5J1200020	B7767777 Set 12 Proj Specif Long Lead Procurem't	56	03JAN02	01APR02	154							
D5J1200030	B7767777 Set 12 Isolation and Containment	27	01OCT02*	11NOV02	40							
D5J1200040	B7767777 Set 12 Dismantlement Tasks	30	12NOV02	31DEC02	40							
D5J1200MF1	B7767777 Complete Set 12 Decommissioning	0		31DEC02	40							
1.1.06.12.04.13 B7767-SET 13-FM 402, 402A, 416, 416B, 4												
D5J1300MS1	B7767777 Set 13 Decommissioning	0	02OCT00*		284							
D5J1300010	B7767777 Set 13 Planning and Engineering	58	02OCT00	03JAN01	284							
D5J1300020	B7767777 Set 13 Proj Specif Long Lead Procurem't	56	04JAN01	02APR01	284							
D5J1300030	B7767777 Set 13 Isolation and Containment	27	01OCT01*	08NOV01	171							
D5J1300040	B7767777 Set 13 Dismantlement Tasks	30	12NOV01	31DEC01	171							
D5J1300MF1	B7767777 Complete Set 13 Decommissioning	0		31DEC01	171							
1.1.06.12.04.14 B7767-SET 14-FM 415, 417 AND ASSOCIATED												
D5J1400MS1	B7767777 Set 14 Decommissioning	0	04OCT99		40							
D5J1400010	B7767777 Set 14 Planning and Engineering	36	04OCT99	30NOV99	40							
D5J1400030	B7767777 Set 14 Isolation and Containment	38	01DEC99	31JAN00	40							
D5J1400020	B7767777 Set 14 Proj Specif Long Lead Procurem't	53	01DEC99	23FEB00	62							
D5J1400040	B7767777 Set 14 Dismantlement Tasks	57	01FEB00	27APR00	40							
D5J1400MF1	B7767777 Complete Set 14 Decommissioning	0		27APR00	40							
1.1.06.12.04.15 B7767-ROOM 416A (VAULT)												
D5J1500MS1	B7767777 Set 15 Decommissioning	0	03APR00*		413							
D5J1500010	B7767777 Set 15 Planning and Engineering	58	03APR00	30JUN00	413							
D5J1500020	B7767777 Set 15 Proj Specif Long Lead Procurem't	56	02OCT00*	29DEC00	357							
D5J1500030	B7767777 Set 15 Isolation and Containment	27	02JAN01	12FEB01	357							
D5J1500040	B7767777 Set 15 Dismantlement Tasks	30	13FEB01	29MAR01	357							
D5J1500MF1	B7767777 Complete Set 15 Decommissioning	0		29MAR01	357							

BL05-W035



Project Start 01OCT97
Project Finish 23SEP05
Data Date 01OCT98
Run Date 11OCT99

© Primavera Systems, Inc.

KAISER-HILL COMPANY
CLOSURE PROJECT BASELINE SCHEDULE
BUILDING 776777 CLOSURE PROJECT

Sheet 11 of 33

CLOSURE KAISER-HILL

207

ROCKY FLATS CLOSURE PROJECT

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish	Total Float	FY99	FY00	FY01	FY02	FY03	FY04	FY05
1.1.06.12.04.16 B7767-RM 426, 427, 427A AND 428												
D5J1600MS1	B7767/777 Start Set 16 Decommissioning	0	04OCT01*		54							
D5J1600010	B7767/777 Set 16 Planning and Engineering	56	04OCT01	03JAN02	54							
D5J1600020	B7767/777 Set 16 Proj Specif Long Lead Procurem't	58	07JAN02	04APR02	54							
D5J1600030	B7767/777 Set 16 Isolation and Containment	27	05APR02	16MAY02	54							
D5J1600040	B7767/777 Set 16 Dismantlement Tasks	30	17MAY02	03JUL02	54							
D5J1600MF1	B7767/777 Complete Set 16 Decommissioning	0		03JUL02	54							
1.1.06.12.04.17 B7767-RM 430 GB481												
D5J1700MS1	B7767/777 Start Set 17 Decommissioning	0	04OCT99		6							
D5J1700030	B7767/777 Set 17 Isolation and Containment	20	04OCT99	02NOV99	6							
D5J1700020	B7767/777 Set 17 Proj Specif Long Lead Procurem't	20	04OCT99	02NOV99	55							
D5J1700040	B7767/777 Set 17 Dismantlement Tasks	38	02DEC99*	01FEB00	38							
D5J1700MF1	B7767/777 Complete Set 17 Decommissioning	0		01FEB00	38							
1.1.06.12.04.18 B7767-RM 430 GB 360-362, 370-373, 368												
D5J1800MS1	B7767/777 Start Set 18 Decommissioning	0	02OCT00*		27							
D5J1800010	B7767/777 Set 18 Planning and Engineering	56	02OCT00	29DEC00	27							
D5J1800020	B7767/777 Set 18 Proj Specif Long Lead Procurem't	75	02JAN01	26APR01	27							
D5J1800030	B7767/777 Set 18 Isolation and Containment	75	30APR01	24AUG01	27							
D5J1800040	B7767/777 Set 18 Dismantlement Tasks	120	01OCT01*	09APR02	6							
D5J1800MF1	B7767/777 Complete Set 18 Decommissioning	0		09APR02	6							
1.1.06.12.04.19 B7767-RM 154A												
D5J1900MS1	B7767/777 Start Set 19 Decommissioning	0	13MAR00*		419							
D5J1900010	B7767/777 Set 19 Planning and Engineering	58	13MAR00	12JUN00	419							
D5J1900020	B7767/777 Set 19 Proj Specif Long Lead Procurem't	45	02OCT00*	12DEC00	350							
D5J1900030	B7767/777 Set 19 Isolation and Containment	26	13DEC00	24JAN01	350							
D5J1900040	B7767/777 Set 19 Dismantlement Tasks	49	01OCT01	17DEC01	194							
D5J1900MF1	B7767/777 Complete Set 19 Decommissioning	0		17DEC01	194							
1.1.06.12.04.20 B7767-RM 430 GB 401,402 HOOD AREA AND R												
D5J2000MS1	B7767/777 Start Set 20 Decommissioning	0	04OCT99		0							

Project Start

Project Finish

Project Date

Run Date

01OCT197

23SEP05

01OCT198

11OCT199

Early Bar

Progress Bar

Critical Activity

BL05: W035

CLOSURE

KAISER-HILL

208

ROCKY FLA

CLOSURE PROJECT

KAISER-HILL COMPANY

CLOSURE PROJECT BASELINE SCHEDULE

BUILDING 776777 CLOSURE PROJECT

Sheet 12 of 33

Sheet 12 of 33

KAISER-HILL COMPANY
CLOSURE PROJECT BASELINE SCHEDULE
BUILDING 776777 CLOSURE PROJECT

BL05:W035

Project Start	01OCT97	Early Bar
Project Finish	23SEP05	Progress Bar
Date Date	01OCT98	Critical Activity
Run Date	11OCT98	

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish	Total Float	FY99	FY00	FY01	FY02	FY03	FY04	FY05
D5J2000010	B776/777 Set 20 Planning and Engineering	36	04OCT99	30NOV99	0							
D5J2000020	B776/777 Set 20 Proj Specif Long Lead Procurem't	38	01DEC99	31JAN00	1							
D5J2000030	B776/777 Set 20 Isolation and Containment	39	01DEC99	01FEB00	0							
D5J2000040	B776/777 Set 20 Dismantlement Tasks	28	02FEB00	15MAR00	0							
D5J2000MF1	B776/777 Complete Set 20 Decommissioning	0		15MAR00	0							
1.1.06.12.04.21 B776/777-RM 430 GB 404, 408, 409, 426, 427												
D5J2100MS1	B776/777 Start Set 21 Decommissioning	0	02FEB00*		118							
D5J2100010	B776/777 Set 21 Planning and Engineering	78	02FEB00	02JUN00	118							
D5J2100020	B776/777 Set 21 Proj Specif Long Lead Procurem't	58	02OCT00*	03JAN01	64							
D5J2100030	B776/777 Set 21 Isolation and Containment	55	04JAN01	29MAR01	64							
D5J2100040	B776/777 Set 21 Dismantlement Tasks	114	02APR01	27SEP01	64							
D5J2100MF1	B776/777 Complete Set 21 Decommissioning	0		27SEP01	64							
1.1.06.12.04.23 B776/777-RM 430 GB 442, 448, 451, 452, 454, 456												
D5J2200MS1	B776/777 Start Set 22 Decommissioning	0	23MAR01*		98							
D5J2200010	B776/777 Set 22 Planning and Engineering	78	23MAR01	25JUL01	138							
D5J2200020	B776/777 Set 22 Proj Specif Long Lead Procurem't	58	27JUN01	26SEP01	98							
D5J2200030	B776/777 Set 22 Isolation and Containment	97	01OCT01*	05MAR02	97							
D5J2200040	B776/777 Set 22 Dismantlement Tasks	208	31OCT01	30SEP02	97							
D5J2200MF1	B776/777 Complete Set 22 Decommissioning	0		30SEP02	97							
1.1.06.12.04.23 B776/777-RM 430 GB 515, ASSOC R-LINE AND G												
D5J2300MS1	B776/777 Start Set 23 Decommissioning	0	04OCT99		0							
D5J2300020	B776/777 Set 23 Proj Specif Long Lead Procurem't	46	04OCT99	15DEC99	0							
D5J2300050	B776/777 Set 23 Modify Rm 127 Wall for Access	37	18OCT99	15DEC99	0							
D5J2300022	B776/777 Set 23 Mgmt Review Prep (1st hot box)	36	19OCT99	15DEC99	0							
D5J2300030	B776/777 Set 23 Isolation and Containment	26	03NOV99	15DEC99	0							
D5J2300025	B776/777 Set 23 Conduct Mgmt Review/CAs	27	16DEC99	28JAN00	0							
D5J2300040	B776/777 Set 23 Dismantlement Tasks	125	16DEC99	30JUN00	0							
D5J2300MF1	B776/777 Complete Set 23 Decommissioning	0		30JUN00	0							

BL05:W035

Project Start	01OCT97	Early Bar
Project Finish	23SEP05	Progress Bar
Data Date	01OCT98	Critical Activity
Run Date	11OCT98	

© Primavera Systems, Inc.

KAISER-HILL COMPANY
CLOSURE PROJECT BASELINE SCHEDULE
BUILDING 776/777 CLOSURE PROJECT

Sheet 13 of 33

CLOSURE KAISER-HILL

209

ROCKY FLATS CLOSURE PROJECT

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish	Total Float	FY99	FY00	FY01	FY02	FY03	FY04	FY05
1.1.06.12.04.24 B776-RM 430 GB756, 758-764 AND ASSOC M												
D5J2400MS1	B7767777 Start Set 24 Decommissioning	0	04OCT00*		175							
D5J2400010	B7767777 Set 24 Planning and Engineering	58	04OCT00	08JAN01	175							
D5J2400020	B7767777 Set 24 Proj Specif Long Lead Procurem't	56	08JAN01	04APR01	175							
D5J2400030	B7767777 Set 24 Isolation and Containment	30	15NOV01*	07JAN02	34							
D5J2400040	B7767777 Set 24 Dismantlement Tasks	61	08JAN02	10APR02	34							
D5J2400MF1	B7767777 Complete Set 24 Decommissioning	0		10APR02	34							
1.1.06.12.04.25 B7767-ROOM 430, RCRA AREAS 90.67, 95.01												
D5J2500MS1	B7767777 Start Set 25 Decommissioning	0	03DEC01*		119							
D5J2500010	B7767777 Set 25 Planning and Engineering	58	03DEC01	05MAR02	119							
D5J2500020	B7767777 Set 25 Proj Specif Long Lead Procurem't	52	06MAR02	23MAY02	119							
D5J2500030	B7767777 Set 25 Isolation and Containment	27	28MAY02	09JUL02	119							
D5J2500040	B7767777 Set 25 Dismantlement Tasks	30	10JUL02	23AUG02	119							
D5J2500MF1	B7767777 Complete Set 25 Decommissioning	0		23AUG02	119							
1.1.06.12.04.26 B7767-TANKS T1, T2, FL1-ROOM 430, RCRA												
D5J2600MS1	B7767777 Start Set 26 Decommissioning	0	03NOV99		6							
D5J2600020	B7767777 Set 26 Proj Specif Long Lead Procurem't	49	03NOV99	24JAN00	6							
D5J2600040	B7767777 Set 26 Dismantlement Tasks	38	02FEB00	30MAR00	0							
D5J2600MF1	B7767777 Complete Set 26 Decommissioning	0		30MAR00	0							
1.1.06.12.04.27 B7767-ROOMS 432, 432A,B,C,D, 440 AND GB												
D5J2700MS1	B7767777 Start Set 27 Decommissioning	0	01NOV01*		110							
D5J2700010	B7767777 Set 27 Planning and Engineering	58	01NOV01	05FEB02	110							
D5J2700020	B7767777 Set 27 Proj Specif Long Lead Procurem't	56	06FEB02	02MAY02	110							
D5J2700030	B7767777 Set 27 Isolation and Containment	30	03MAY02	19JUN02	110							
D5J2700040	B7767777 Set 27 Dismantlement Tasks	50	12JUL02	30SEP02	97							
D5J2700MF1	B7767777 Complete Set 27 Decommissioning	0		30SEP02	97							
1.1.06.12.04.28 B7767-ROOM 433												
D5J2800MS1	B7767777 Start Set 28 Decommissioning	0	01FEB01*		295							
D5J2800010	B7767777 Set 28 Planning and Engineering	58	01FEB01	02MAY01	295							

Project Start
01OCT97

Project Finish
23SEP05

Data Date
01OCT98

Run Date
11OCT98

Early Bar

Progress Bar

Critical Activity

BL05-W035

KAISER-HILL COMPANY
CLOSURE PROJECT BASELINE SCHEDULE
BUILDING 776777 CLOSURE PROJECT

Sheet 14 of 33

CLOSURE KAISER-HILL 210
ROCKY FLAT CLOSURE PROJECT

Sheet 14 of 33

KAISER-HILL COMPANY
CLOSURE PROJECT BASELINE SCHEDULE
BUILDING 776/777 CLOSURE PROJECT

CLOSURE / KAISER-HILL
2006 210
 ROCKY FLAT CLOSURE PROJECT

BL05:W035

Early Bar
 Progress Bar
 Critical Activity

Project Start 01OCT97
 Project Finish 23SEP05
 Data Date 01OCT98
 Run Date 11OCT98

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish	Total Float	FY99	FY00	FY01	FY02	FY03	FY04	FY05
D5J2800020	B776/777 Set 28 Proj Specif Long Lead Procurem't	56	03MAY01	31JUL01	295							
D5J2800030	B776/777 Set 28 Isolation and Containment	37	01AUG01	27SEP01	295							
D5J2800040	B776/777 Set 28 Dismantlement Tasks	30	01OCT01	14NOV01	295							
D5J2800MF1	B776/777 Complete Set 28 Decommissioning	0		14NOV01	295							
1.1.06.12.04.29 B7767-ROOM 437 GB A1, A2, A3 AND ASSOCI												
D5J2900MS1	B776/777 Start Set 29 Decommissioning	0	02FEB00*		249							
D5J2900010	B776/777 Set 29 Planning and Engineering	58	02FEB00	02MAY00	249							
D5J2900020	B776/777 Set 29 Proj Specif Long Lead Procurem't	56	02OCT00*	29DEC00	155							
D5J2900030	B776/777 Set 29 Isolation and Containment	56	02JAN01	28MAR01	155							
D5J2900040	B776/777 Set 29 Dismantlement Tasks	115	29MAR01	27SEP01	155							
D5J2900MF1	B776/777 Complete Set 29 Decommissioning	0		27SEP01	155							
1.1.06.12.04.30 B7767-ROOM 442 (VAULT)												
D5J3000MS1	B776/777 Start Set 30 Decommissioning	0	05MAR01*		205							
D5J3000010	B776/777 Set 30 Planning and Engineering	58	05MAR01	01JUN01	205							
D5J3000020	B776/777 Set 30 Proj Specif Long Lead Procurem't	56	04JUN01	29AUG01	205							
D5J3000030	B776/777 Set 30 Isolation and Containment	26	01OCT01*	07NOV01	187							
D5J3000040	B776/777 Set 30 Dismantlement Tasks	30	08NOV01	28DEC01	187							
D5J3000MF1	B776/777 Complete Set 30 Decommissioning	0		28DEC01	187							
1.1.06.12.04.31 B7767-ROOM 433 AND NDT LINE												
D5J3100MS1	B776/777 Start Set 31 Decommissioning	0	04OCT99		143							
D5J3100010	B776/777 Set 31 Planning and Engineering	36	04OCT99	30NOV99	143							
D5J3100020	B776/777 Set 31 Proj Specif Long Lead Procurem't	75	01DEC99	28MAR00	143							
D5J3100030	B776/777 Set 31 Isolation and Containment	75	01DEC99	28MAR00	143							
D5J3100040	B776/777 Set 31 Dismantlement Tasks	95	29MAR00	25AUG00	143							
D5J3100MF1	B776/777 Complete Set 31 Decommissioning	0		25AUG00	143							
1.1.06.12.04.32 B7767-RM 444, 446-450, 436 AND RCRA ARE												
D5J3200MS1	B776/777 Start Set 32 Decommissioning	0	03JAN01*		243							
D5J3200010	B776/777 Set 32 Planning and Engineering	58	03JAN01	03APR01	243							

Sheet 15 of 33

BL05:W035

Project Start	01OCT97
Project Finish	29SEP05
Date Date	01OCT98
Run Date	11OCT99

Early Bar
Progress Bar
Critical Activity

KAISER-HILL COMPANY
CLOSURE PROJECT BASELINE SCHEDULE
BUILDING 776777 CLOSURE PROJECT

CLOSURE KAISER-HILL
2006 211
ROCKY FLATS CLOSURE PROJECT

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish	Total Float	FY99	FY00	FY01	FY02	FY03	FY04	FY05
D5J3200020	B776/777 Set 32 Proj Specif Long Lead Procurem't	56	04APR01	29JUN01	243							
D5J3200030	B776/777 Set 32 Isolation and Containment	26	02JUL01	10AUG01	243							
D5J3200040	B776/777 Set 32 Dismantlement Tasks	30	01OCT01*	14NOV01	213							
D5J3200MF1	B776/777 Complete Set 32 Decommissioning	0		14NOV01	213							
1.1.06.12.04.33 B776/777 ROOM 445 AND GB494, 495, 499-502												
D5J3300MS1	B776/777 Set 33 Decommissioning	0	04OCT99		0							
D5J3300010	B776/777 Set 33 Planning and Engineering	36	04OCT99	30NOV99	0							
D5J3300020	B776/777 Set 33 Proj Specif Long Lead Procurem't	35	01DEC99	26JAN00	3							
D5J3300030	B776/777 Set 33 Isolation and Containment	38	01DEC99	31JAN00	0							
D5J3300040	B776/777 Set 33 Dismantlement Tasks	153	01FEB00	28SEP00	0							
D5J3300MF1	B776/777 Complete Set 33 Decommissioning	0		28SEP00	0							
1.1.06.12.04.34 B776/777 ROOM 452 GB 522, 548, 022, 027, 0												
D5J3400MS1	B776/777 Set 34 Decommissioning	0	02FEB00*		169							
D5J3400010	B776/777 Set 34 Planning and Engineering	58	02FEB00	02MAY00	169							
D5J3400020	B776/777 Set 34 Proj Specif Long Lead Procurem't	45	02OCT00*	12DEC00	75							
D5J3400030	B776/777 Set 34 Isolation and Containment	50	13DEC00	01MAR01	75							
D5J3400040	B776/777 Set 34 Dismantlement Tasks	132	05MAR01	27SEP01	75							
D5J3400MF1	B776/777 Complete Set 34 Decommissioning	0		27SEP01	75							
1.1.06.12.04.35 B776/777 ROOM 452 GB 523-528, 530, 532, 53												
D5J3500MS1	B776/777 Set 35 Decommissioning	0	17NOV00*		157							
D5J3500010	B776/777 Set 35 Planning and Engineering	58	17NOV00	21FEB01	157							
D5J3500020	B776/777 Set 35 Proj Specif Long Lead Procurem't	56	22FEB01	18MAY01	157							
D5J3500030	B776/777 Set 35 Isolation and Containment	122	01OCT01	11APR02	75							
D5J3500040	B776/777 Set 35 Dismantlement Tasks	198	15NOV01	30SEP02	75							
D5J3500MF1	B776/777 Complete Set 35 Decommissioning	0		30SEP02	75							
1.1.06.12.04.36 B776/777 ROOM 452 AND 475 GB 544 AND 543 A												
D5J3600MS1	B776/777 Set 36 Decommissioning	0	03APR00*		240							
D5J3600010	B776/777 Set 36 Planning and Engineering	58	03APR00	30JUN00	240							

Sheet 16 of 33

BL05:W035

Project Start	01OCT97
Project Finish	23SEP05
Data Date	01OCT98
Run Date	11OCT99

© Primavera Systems, Inc.

KAISER-HILL COMPANY
CLOSURE PROJECT BASELINE SCHEDULE
BUILDING 776/777 CLOSURE PROJECT

CLOSURE KAISER-HILL
2006 212
 ROCKY FLAT CLOSURE PROJECT

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish	Total Float	FY99	FY00	FY01	FY02	FY03	FY04	FY05
D5J3600020	B776/777 Set 36 Proj Specif Long Lead Procurem't	56	02OCT00	29DEC00	184							
D5J3600030	B776/777 Set 36 Isolation and Containment	57	02JAN01	29MAR01	184							
D5J3600040	B776/777 Set 36 Dismantlement Tasks	85	02APR01	13AUG01	184							
D5J3600MF1	B776/777 Complete Set 36 Decommissioning	0		13AUG01	184							
1.1.06.12.04.37 B776/777 ROOM 453, 454, AND 460												
D5J3700MS1	B776/777 Start Set 37 Decommissioning	0	15OCT01		101							
D5J3700010	B776/777 Set 37 Planning and Engineering	58	15OCT01	16JAN02	101							
D5J3700020	B776/777 Set 37 Proj Specif Long Lead Procurem't	56	17JAN02	15APR02	101							
D5J3700030	B776/777 Set 37 Isolation and Containment	34	16APR02	06JUN02	101							
D5J3700040	B776/777 Set 37 Dismantlement Tasks	67	10JUN02	23SEP02	101							
D5J3700MF1	B776/777 Complete Set 37 Decommissioning	0		23SEP02	101							
1.1.06.12.04.38 B776/777 ROOMS 455, 457, 461 AND 458												
D5J3800MS1	B776/777 Start Set 38 Decommissioning	0	01FEB01		223							
D5J3800010	B776/777 Set 38 Planning and Engineering	58	01FEB01	02MAY01	223							
D5J3800020	B776/777 Set 38 Proj Specif Long Lead Procurem't	56	03MAY01	31JUL01	223							
D5J3800030	B776/777 Set 38 Isolation and Containment	27	01AUG01	12SEP01	223							
D5J3800040	B776/777 Set 38 Dismantlement Tasks	30	01OCT01	14NOV01	213							
D5J3800MF1	B776/777 Complete Set 38 Decommissioning	0		14NOV01	213							
1.1.06.12.04.39 B776/777 ROOMS 459 AND 459A												
D5J3900MS1	B776/777 Start Set 39 Decommissioning	0	01FEB01		223							
D5J3900010	B776/777 Set 39 Planning and Engineering	58	01FEB01	02MAY01	223							
D5J3900020	B776/777 Set 39 Proj Specif Long Lead Procurem't	56	03MAY01	31JUL01	223							
D5J3900030	B776/777 Set 39 Isolation and Containment	27	01AUG01	12SEP01	223							
D5J3900040	B776/777 Set 39 Dismantlement Tasks	30	01OCT01	14NOV01	213							
D5J3900MF1	B776/777 Complete Set 39 Decommissioning	0		14NOV01	213							
1.1.06.12.04.40 B776/777 ROOM 462 - A VAULT												
D5J4000MS1	B776/777 Start Set 40 Decommissioning	0	01FEB01		224							
D5J4000010	B776/777 Set 40 Planning and Engineering	58	01FEB01	02MAY01	224							

Project Start

Project Finish

Data Date

Run Date

01OCT97

23SEP05

01OCT98

11OCT99

Early Bar

Progress Bar

Critical Activity

BL05:W035

KAISER-HILL COMPANY

CLOSURE PROJECT BASELINE SCHEDULE

BUILDING 776/777 CLOSURE PROJECT

Sheet 17 of 33

CLOSURE KAISER-HILL

2006 213

ROCKY FLATS CLOSURE PROJECT

© Primavera Systems, Inc.

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish	Total Float	FY99	FY00	FY01	FY02	FY03	FY04	FY05
D5J4000020	B776/777 Set 40 Proj Specif Long Lead Procurem't	56	03MAY01	31JUL01	224							
D5J4000030	B776/777 Set 40 Isolation and Containment	26	01AUG01	11SEP01	224							
D5J4000040	B776/777 Set 40 Dismantlement Tasks	30	01OCT01*	14NOV01	213							
D5J4000MF1	B776/777 Complete Set 40 Decommissioning	0		14NOV01	213							
1.1.06.12.04.41 B776/7 ROOM 463 AND GB A4-A9 AND A11												
D5J4100MS1	B776/777 Start Set 41 Decommissioning	0	02FEB00*		249							
D5J4100010	B776/777 Set 41 Planning and Engineering	58	02FEB00	02MAY00	249							
D5J4100020	B776/777 Set 41 Proj Specif Long Lead Procurem't	56	02OCT00*	29DEC00	155							
D5J4100030	B776/777 Set 41 Isolation and Containment	54	02JAN01	26MAR01	155							
D5J4100040	B776/777 Set 41 Dismantlement Tasks	117	27MAR01	27SEP01	155							
D5J4100MF1	B776/777 Complete Set 41 Decommissioning	0		27SEP01	155							
1.1.06.12.04.42 B776/7 ROOM 464, 471, 477A, 463A AND 463												
D5J4200MS1	B776/777 Start Set 42 Decommissioning	0	01FEB01*		224							
D5J4200010	B776/777 Set 42 Planning and Engineering	58	01FEB01	02MAY01	224							
D5J4200020	B776/777 Set 42 Proj Specif Long Lead Procurem't	56	03MAY01	31JUL01	224							
D5J4200030	B776/777 Set 42 Isolation and Containment	26	01AUG01	11SEP01	224							
D5J4200040	B776/777 Set 42 Dismantlement Tasks	30	01OCT01*	14NOV01	213							
D5J4200MF1	B776/777 Complete Set 42 Decommissioning	0		14NOV01	213							
1.1.06.12.04.43 B776/7 ROOMS 465 AND 465A												
D5J4300MS1	B776/777 Start Set 43 Decommissioning	0	02JAN02*		98							
D5J4300010	B776/777 Set 43 Planning and Engineering	58	02JAN02	02APR02	98							
D5J4300020	B776/777 Set 43 Proj Specif Long Lead Procurem't	56	03APR02	28JUN02	98							
D5J4300030	B776/777 Set 43 Isolation and Containment	26	01JUL02	09AUG02	98							
D5J4300040	B776/777 Set 43 Dismantlement Tasks	30	12AUG02	26SEP02	98							
D5J4300MF1	B776/777 Complete Set 43 Decommissioning	0		26SEP02	98							
1.1.06.12.04.44 B776/7 ROOMS 466-472, 474 AND 474D												
D5J4400MS1	B776/777 Start Set 44 Decommissioning	0	03APR00*		356							
D5J4400010	B776/777 Set 44 Planning and Engineering	58	03APR00	30JUN00	356							

Project Start

01OCT97

Project Finish

23SEP05

Date Date

01OCT98

Run Date

11OCT99

Early Bar

Progress Bar

Critical Activity

BL05:W035

KAISER-HILL COMPANY

CLOSURE PROJECT BASELINE SCHEDULE

BUILDING 776/777 CLOSURE PROJECT

Sheet 18 of 33

CLOSURE

KAISER-HILL

214

ROCKY MOUNTAIN INSURE PROJECT

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish	Total Float	FY99	FY00	FY01	FY02	FY03	FY04	FY05
D5J4400020	B776/777 Set 44 Proj Specif Long Lead Procurem't	56	02OCT00*	29DEC00	300							
D5J4400030	B776/777 Set 44 Isolation and Containment	56	02JAN01	28MAR01	300							
D5J4400040	B776/777 Set 44 Dismantlement Tasks	58	28MAR01	28JUN01	300							
D5J4400MF1	B776/777 Complete Set 44 Decommissioning	0		28JUN01	300							
1.1.06.12.04.45 B776/7 ROOMS 473 AND 476												
D5J4500MS1	B776/777 Set 45 Decommissioning	0	04OCT99		29							
D5J4500010	B776/777 Set 45 Planning and Engineering	36	04OCT99	30NOV99	29							
D5J4500030	B776/777 Set 45 Isolation and Containment	38	01DEC99	31JAN00	29							
D5J4500020	B776/777 Set 45 Proj Specif Long Lead Procurem't	38	01DEC99	31JAN00	47							
D5J4500040	B776/777 Set 45 Dismantlement Tasks	28	16MAR00	27APR00	0							
D5J4500MF1	B776/777 Complete Set 45 Decommissioning	0		27APR00	40							
1.1.06.12.04.46 B776/7 ROOM 478 - B VAULT												
D5J4600MS1	B776/777 Set 46 Decommissioning	0	01FEB01*		224							
D5J4600010	B776/777 Set 46 Planning and Engineering	58	01FEB01	02MAY01	224							
D5J4600020	B776/777 Set 46 Proj Specif Long Lead Procurem't	56	03MAY01	31JUL01	224							
D5J4600030	B776/777 Set 46 Isolation and Containment	26	01AUG01	11SEP01	224							
D5J4600040	B776/777 Set 46 Dismantlement Tasks	30	01OCT01*	14NOV01	213							
D5J4600MF1	B776/777 Complete Set 46 Decommissioning	0		14NOV01	213							
1.1.06.12.04.47 B776/7 ROOMS 479, 481-483, 483A, 483B AND 477												
D5J4700MS1	B776/777 Set 47 Decommissioning	0	01FEB01*		224							
D5J4700010	B776/777 Set 47 Planning and Engineering	58	01FEB01	02MAY01	224							
D5J4700020	B776/777 Set 47 Proj Specif Long Lead Procurem't	56	03MAY01	31JUL01	224							
D5J4700030	B776/777 Set 47 Isolation and Containment	26	01AUG01	11SEP01	224							
D5J4700040	B776/777 Set 47 Dismantlement Tasks	30	01OCT01*	14NOV01	213							
D5J4700MF1	B776/777 Complete Set 47 Decommissioning	0		14NOV01	213							
1.1.06.12.04.48 B776/7 KATHABAR SYSTEM (EXCLUDING INSIDE)												
D5J4800MS1	B776/777 Set 48 Decommissioning	0	01FEB01*		205							
D5J4800010	B776/777 Set 48 Planning and Engineering	58	01FEB01	02MAY01	205							

Sheet 19 of 33

KAISER-HILL COMPANY
CLOSURE PROJECT BASELINE SCHEDULE
BUILDING 776/777 CLOSURE PROJECT

CLOSURE KAISER-HILL

215

ROCKY FLATS CLOSURE PROJECT

BL05:W035



Project Start 01OCT97
Project Finish 23SEP05
Date Date 01OCT98
Run Date 11OCT99

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish	Total Float	FY99	FY00	FY01	FY02	FY03	FY04	FY05
D5J4800020	B776777 Set 48 Proj Specif Long Lead Procurem't	56	03MAY01	31JUL01	205							
D5J4800030	B776777 Set 48 Isolation and Containment	20	01AUG01	30AUG01	205							
D5J4800040	B776777 Set 48 Dismantlement Tasks	55	01OCT01*	27DEC01	188							
D5J4800MF1	B776777 Complete Set 48 Decommissioning	0		27DEC01	188							
1.1.06.12.04.49 B7767-MODULAR												
D5J4900MS1	B776777 Start Set 49 Decommissioning	0	01FEB01*		224							
D5J4900010	B776777 Set 49 Planning and Engineering	58	01FEB01	02MAY01	224							
D5J4900020	B776777 Set 49 Proj Specif Long Lead Procurem't	56	03MAY01	31JUL01	224							
D5J4900030	B776777 Set 49 Isolation and Containment	26	01AUG01	11SEP01	224							
D5J4900040	B776777 Set 49 Dismantlement Tasks	30	01OCT01*	14NOV01	213							
D5J4900MF1	B776777 Complete Set 49 Decommissioning	0		14NOV01	213							
1.1.06.12.04.50 B7767-RM 101-103, 103A, 104, 104A-C-E												
D5J5000MS1	B776777 Start Set 50 Decommissioning	0	01FEB01*		224							
D5J5000010	B776777 Set 50 Planning and Engineering	58	01FEB01	02MAY01	224							
D5J5000020	B776777 Set 50 Proj Specif Long Lead Procurem't	56	03MAY01	31JUL01	224							
D5J5000030	B776777 Set 50 Isolation and Containment	26	01AUG01	11SEP01	224							
D5J5000040	B776777 Set 50 Dismantlement Tasks	30	01OCT01*	14NOV01	213							
D5J5000MF1	B776777 Complete Set 50 Decommissioning	0		14NOV01	213							
1.1.06.12.04.51 B7767-GB IN ROOMS 154A: 046, 495, 496, 4												
D5J5100MS1	B776777 Start Set 51 Decommissioning	0	03APR00*		211							
D5J5100010	B776777 Set 51 Planning and Engineering	58	03APR00	30JUN00	211							
D5J5100020	B776777 Set 51 Proj Specif Long Lead Procurem't	56	02OCT00*	29DEC00	155							
D5J5100030	B776777 Set 51 Isolation and Containment	57	02JAN01	29MAR01	155							
D5J5100040	B776777 Set 51 Dismantlement Tasks	114	02APR01	27SEP01	155							
D5J5100MF1	B776777 Complete Set 51 Decommissioning	0		27SEP01	155							
1.1.06.12.04.52 B7767-TANKS T360 AND T370, GB361 AND 37												
D5J5200MS1	B776777 Start Set 52 Decommissioning	0	02OCT00*		215							
D5J5200010	B776777 Set 52 Planning and Engineering	35	02OCT00	27NOV00	215							

Sheet 20 of 33

BL05:W035



Project Start 01OCT97
Project Finish 24SEP05
Data Date 01OCT98
Run Date 11OCT99

© Primavera Systems, Inc.

KAISER-HILL COMPANY
CLOSURE PROJECT BASELINE SCHEDULE
BUILDING 776/777 CLOSURE PROJECT

CLOSURE KAISER-HILL
216
ROCKY FLAT CLOSURE PROJECT

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish	Total Float	FY99	FY00	FY01	FY02	FY03	FY04	FY05
D5J5200020	B776/777 Set 52 Proj Specif Long Lead Procurem't	18	28NOV00	26DEC00	215							
D5J5200030	B776/777 Set 52 Isolation and Containment	58	27DEC00	27MAR01	215							
D5J5200040	B776/777 Set 52 Dismantlement Tasks	56	28MAR01	25JUN01	215							
D5J5200MF1	B776/777 Complete Set 52 Decommissioning	0		25JUN01	215							
1.1.06.12.04.53 B776/777 ROOM 152 VAULT, RCRA AREA 90.85												
D5J5300MS1	B776/777 Start Set 53 Decommissioning	0	01FEB01*		175							
D5J5300010	B776/777 Set 53 Planning and Engineering	58	01FEB01	02MAY01	175							
D5J5300020	B776/777 Set 53 Proj Specif Long Lead Procurem't	56	03MAY01	31JUL01	175							
D5J5300030	B776/777 Set 53 Isolation and Containment	37	01AUG01	27SEP01	175							
D5J5300040	B776/777 Set 53 Dismantlement Tasks	68	01OCT01*	17JAN02	175							
D5J5300MF1	B776/777 Complete Set 53 Decommissioning	0		17JAN02	175							
1.1.06.12.04.54 B776/777 ROOM 154, 154B, 155, 161B, 153 DO												
D5J5400MS1	B776/777 Start Set 54 Decommissioning	0	01FEB01*		222							
D5J5400010	B776/777 Set 54 Planning and Engineering	58	01FEB01	02MAY01	222							
D5J5400020	B776/777 Set 54 Proj Specif Long Lead Procurem't	56	03MAY01	31JUL01	222							
D5J5400030	B776/777 Set 54 Isolation and Containment	26	01AUG01	11SEP01	222							
D5J5400040	B776/777 Set 54 Dismantlement Tasks	32	01OCT01*	16NOV01	211							
D5J5400MF1	B776/777 Complete Set 54 Decommissioning	0		16NOV01	211							
1.1.06.12.04.55 B776/777 TANKS SRV3-5, GB0001, RCRA AREA 9												
D5J5500MS1	B776/777 Start Set 55 Decommissioning	0	04OCT99		63							
D5J5500010	B776/777 Set 55 Planning and Engineering	52	04OCT99	27DEC99	63							
D5J5500020	B776/777 Set 55 Proj Specif Long Lead Procurem't	56	28DEC99	23MAR00	63							
D5J5500040	B776/777 Set 55 Dismantlement Tasks	40	01MAY00	30JUN00	0							
D5J5500MF1	B776/777 Complete Set 55 Decommissioning	0		30JUN00	0							
1.1.06.12.04.56 B776/777 ROOM 161												
D5J5600MS1	B776/777 Start Set 56 Decommissioning	0	01FEB01*		222							
D5J5600010	B776/777 Set 56 Planning and Engineering	58	01FEB01	02MAY01	222							
D5J5600020	B776/777 Set 56 Proj Specif Long Lead Procurem't	56	03MAY01	31JUL01	222							

Sheet 21 of 33

KAISER-HILL COMPANY
CLOSURE PROJECT BASELINE SCHEDULE
BUILDING 776/777 CLOSURE PROJECT

CLOSURE KAISER-HILL
2006 217
ROCKY FLATS CLOSURE PROJECT

BL05:W035

Project Start	01OCT97	Early Bar
Project Finish	23SEP05	Progress Bar
Data Date	01OCT98	Critical Activity
Run Date	11OCT99	

© Primavera Systems, Inc.

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish	Total Float	FY99					FY00					FY01					FY02					FY03					FY04					FY05				
D5J5600030	B7767777 Set 56 Isolation and Containment	26	01AUG01	11SEP01	222																																			
D5J5600040	B7767777 Set 56 Dismantlement Tasks	32	01OCT01*	16NOV01	211																																			
D5J5600MF1	B7767777 Complete Set 56 Decommissioning	0		16NOV01	211																																			
1.1.06.12.04.57 B7767-ROOM 156, 160, 159A, 159, 159B, 1																																								
D5J5700MS1	B7767777 Start Set 57 Decommissioning	0	06DEC01*		111																																			
D5J5700010	B7767777 Set 57 Planning and Engineering	58	06DEC01	08MAR02	111																																			
D5J5700020	B7767777 Set 57 Proj Specif Long Lead Procurem't	56	11MAR02	05JUN02	111																																			
D5J5700030	B7767777 Set 57 Isolation and Containment	26	06JUN02	17JUL02	111																																			
D5J5700040	B7767777 Set 57 Dismantlement Tasks	32	18JUL02	06SEP02	111																																			
D5J5700MF1	B7767777 Complete Set 57 Decommissioning	0		06SEP02	111																																			
1.1.06.12.04.58 B7767-ROOMS 157, 158 AND DOCK 4																																								
D5J5800MS1	B7767777 Start Set 58 Decommissioning	0	06DEC01*		111																																			
D5J5800010	B7767777 Set 58 Planning and Engineering	58	06DEC01	08MAR02	111																																			
D5J5800020	B7767777 Set 58 Proj Specif Long Lead Procurem't	56	11MAR02	05JUN02	111																																			
D5J5800030	B7767777 Set 58 Isolation and Containment	26	06JUN02	17JUL02	111																																			
D5J5800040	B7767777 Set 58 Dismantlement Tasks	32	18JUL02	06SEP02	111																																			
D5J5800MF1	B7767777 Complete Set 58 Decommissioning	0		06SEP02	111																																			
1.1.06.12.04.59 B7767-ROOMS 138, 139, 144, 147																																								
D5J5900MS1	B7767777 Start Set 59 Decommissioning	0	01FEB01*		222																																			
D5J5900010	B7767777 Set 59 Planning and Engineering	58	01FEB01	02MAY01	222																																			
D5J5900020	B7767777 Set 59 Proj Specif Long Lead Procurem't	56	03MAY01	31JUL01	222																																			
D5J5900030	B7767777 Set 59 Isolation and Containment	26	01AUG01	11SEP01	222																																			
D5J5900040	B7767777 Set 59 Dismantlement Tasks	32	01OCT01*	16NOV01	211																																			
D5J5900MF1	B7767777 Complete Set 59 Decommissioning	0		16NOV01	211																																			
1.1.06.12.04.60 B7767-ROOMS 146, 146A, B, C																																								
D5J6000MS1	B7767777 Start Set 60 Decommissioning	0	01FEB01*		220																																			
D5J6000010	B7767777 Set 60 Planning and Engineering	58	01FEB01	02MAY01	220																																			
D5J6000020	B7767777 Set 60 Proj Specif Long Lead Procurem't	56	03MAY01	31JUL01	220																																			

Sheet 22 of 33

KAISER-HILL COMPANY
CLOSURE PROJECT BASELINE SCHEDULE
BUILDING 7767777 CLOSURE PROJECT

BL05-W035

01OCT97
 23SEP05
 01OCT96
 11OCT99

Project Start
 Project Finish
 Data Date
 Run Date

© Primavera
 Inc.

CLOSURE
KAISER-HILL
2006
218
ROCKY MOUNTAIN CLOSURE PROJECT

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish	Total Float	FY99	FY00	FY01	FY02	FY03	FY04	FY05
D5J6000030	B776/777 Set 60 Isolation and Containment	20	01AUG01	30AUG01	220							
D5J6000040	B776/777 Set 60 Dismantlement Tasks	40	01OCT01*	03DEC01	203							
D5J60000MF1	B776/777 Complete Set 60 Decommissioning	0		03DEC01	203							
1.1.06.12.04.61	B776/777 ROOM 135 (PILOT FBI RCRA AREA 49)											
D5J61000MS1	B776/777 Start Set 61 Decommissioning	0	14DEC01*		104							
D5J6100010	B776/777 Set 61 Planning and Engineering	58	14DEC01	18MAR02	104							
D5J6100020	B776/777 Set 61 Proj Specif Long Lead Procurem't	56	19MAR02	13JUN02	104							
D5J6100030	B776/777 Set 61 Isolation and Containment	20	14JUN02	16JUL02	104							
D5J6100040	B776/777 Set 61 Dismantlement Tasks	40	17JUL02	18SEP02	104							
D5J61000MF1	B776/777 Complete Set 61 Decommissioning	0		18SEP02	104							
1.1.06.12.04.62	B776/777 TANKS FBI 1 AND FBI 2 AND ASSOC R											
D5J62000MS1	B776/777 Start Set 62 Decommissioning	0	03APR00		0							
D5J6200020	B776/777 Set 62 Proj Specif Long Lead Procurem't	32	03APR00	19MAY00	1							
D5J6200040	B776/777 Set 62 Dismantlement Tasks	58	03APR00	30JUN00	0							
D5J62000MF1	B776/777 Complete Set 62 Decommissioning	0		30JUN00	0							
1.1.06.12.04.63	B776/777 ROOMS 118, 118A, B, C, D, E, F, G, H AND											
D5J63000MS1	B776/777 Start Set 63 Decommissioning	0	01FEB01*		116							
D5J6300010	B776/777 Set 63 Planning and Engineering	58	01FEB01	02MAY01	116							
D5J6300020	B776/777 Set 63 Proj Specif Long Lead Procurem't	56	03MAY01	31JUL01	116							
D5J6300030	B776/777 Set 63 Isolation and Containment	37	01AUG01	27SEP01	116							
D5J6300040	B776/777 Set 63 Dismantlement Tasks	127	01OCT01*	19APR02	116							
D5J63000MF1	B776/777 Complete Set 63 Decommissioning	0		19APR02	116							
1.1.06.12.04.64	B776/777 SARF (AREA 512, 513, 515, 517, 51)											
D5J64000MS1	B776/777 Start Set 64 Decommissioning	0	02FEB00*		249							
D5J6400010	B776/777 Set 64 Planning and Engineering	58	02FEB00	02MAY00	249							
D5J6400020	B776/777 Set 64 Proj Specif Long Lead Procurem't	45	02OCT00*	12DEC00	155							
D5J6400030	B776/777 Set 64 Isolation and Containment	80	13DEC00	18APR01	155							
D5J6400040	B776/777 Set 64 Dismantlement Tasks	162	16JAN01	27SEP01	155							

Sheet 23 of 33

BL05-W035



Project Start 01OCT97
 Project Finish 23SEP05
 Date Date 01OCT98
 Run Date 11OCT98

KAISER-HILL COMPANY

CLOSURE PROJECT BASELINE SCHEDULE
 BUILDING 776/777 CLOSURE PROJECT

CLOSURE KAISER-HILL

219

ROCKY FLATS CLOSURE PROJECT

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish	Total Float	FY99	FY00	FY01	FY02	FY03	FY04	FY05
D5J6400MF1	B776/777 Complete Set 64 Decommissioning	0		27SEP01	155							
1.1.06.12.04.65 B776/777 ROOM 150, 150A, 136, 127J AND 141												
D5J6500MS1	B776/777 Set 65 Decommissioning	0	01OCT01*		97							
D5J6500010	B776/777 Set 65 Planning and Engineering	58	01OCT01	02JAN02	97							
D5J6500020	B776/777 Set 65 Proj Specif Long Lead Procurem't	56	03JAN02	01APR02	97							
D5J6500030	B776/777 Set 65 Isolation and Containment	37	02APR02	29MAY02	97							
D5J6500040	B776/777 Set 65 Dismantlement Tasks	77	30MAY02	30SEP02	97							
D5J6500MF1	B776/777 Complete Set 65 Decommissioning	0		30SEP02	97							
1.1.06.12.04.66 B776/777 ASHF INCLUDING RDA MDA TA J177 J												
D5J6600MS1	B776/777 Set 66 Decommissioning	0	05DEC01*		0							
D5J6600010	B776/777 Set 66 Planning and Engineering	58	05DEC01	07MAR02	0							
D5J6600020	B776/777 Set 66 Proj Specif Long Lead Procurem't	56	08MAR02	04JUN02	0							
D5J6600030	B776/777 Set 66 Isolation and Containment	73	05JUN02	30SEP02	0							
D5J6600040	B776/777 Set 66 Dismantlement Tasks	228	01OCT02	30SEP03	0							
D5J6600MF1	B776/777 Complete Set 66 Decommissioning	0		30SEP03	0							
1.1.06.12.04.67 B776/777 ROOMS 134, 123, 137, RCRA AREA 49												
D5J6700MS1	B776/777 Set 67 Decommissioning	0	01NOV01*		176							
D5J6700010	B776/777 Set 67 Planning and Engineering	58	01NOV01	05FEB02	176							
D5J6700020	B776/777 Set 67 Proj Specif Long Lead Procurem't	57	08FEB02	03MAY02	176							
D5J6700030	B776/777 Set 67 Isolation and Containment	26	06MAY02	14JUN02	176							
D5J6700040	B776/777 Set 67 Dismantlement Tasks	40	17JUN02	19AUG02	176							
D5J6700MF1	B776/777 Complete Set 67 Decommissioning	0		19AUG02	176							
1.1.06.12.04.68 B776/777 ROOM 1, 127, 127A, 127B, RCRA ARE												
D5J6800MS1	B776/777 Set 68 Decommissioning	0	03APR02*		38							
D5J6800010	B776/777 Set 68 Planning and Engineering	58	03APR02	02JUL02	38							
D5J6800020	B776/777 Set 68 Proj Specif Long Lead Procurem't	55	03JUL02	30SEP02	38							
D5J6800030	B776/777 Set 68 Isolation and Containment	26	01OCT02	07NOV02	38							
D5J6800040	B776/777 Set 68 Dismantlement Tasks	33	11NOV02	06JAN03	38							

Sheet 24 of 33

BL05:W035



Project Start
Project Finish
Data Date
Run Date

KAISER-HILL COMPANY
CLOSURE PROJECT BASELINE SCHEDULE
BUILDING 776/777 CLOSURE PROJECT

CLOSURE
KAISER-HILL
220
ROCKY FLAT CLOSURE PROJECT

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish	Total Float	FY99	FY00	FY01	FY02	FY03	FY04	FY05
D5J6800MF1	B776/777 Complete Set 68 Decommissioning	0		06JAN03	38							
1.1.06.12.04.69	B776/777 TANK T1A, T1B, T2A, T2B, T3 AND A											
D5J6900MS1	B776/777 Start Set 69 Decommissioning	0	01MAY02*		179							
D5J6900010	B776/777 Set 69 Planning and Engineering	58	01MAY02	31JUL02	179							
D5J69000020	B776/777 Set 69 Proj Specif Long Lead Procurem't	38	01AUG02	01OCT02	179							
D5J69000030	B776/777 Set 69 Isolation and Containment	10	02OCT02	16OCT02	179							
D5J69000040	B776/777 Set 69 Dismantlement Tasks	38	17OCT02	17DEC02	179							
D5J6900MF1	B776/777 Complete Set 69 Decommissioning	0		02MAY03	93							
1.1.06.12.04.70	B776/777 ROOM 230, 231A, 231B, 232, 2											
D5J7000MS1	B776/777 Start Set 70 Decommissioning	0	01FEB01*		224							
D5J7000010	B776/777 Set 70 Planning and Engineering	58	01FEB01	02MAY01	224							
D5J70000020	B776/777 Set 70 Proj Specif Long Lead Procurem't	56	03MAY01	31JUL01	224							
D5J70000030	B776/777 Set 70 Isolation and Containment	26	01AUG01	11SEP01	224							
D5J70000040	B776/777 Set 70 Dismantlement Tasks	30	01OCT01*	14NOV01	213							
D5J7000MF1	B776/777 Complete Set 70 Decommissioning	0		14NOV01	213							
1.1.06.12.04.71	B776/777 SUPERDRY AIR DRYING SYSTEM 2D FLO											
D5J7100MS1	B776/777 Start Set 71 Decommissioning	0	01FEB01*		196							
D5J7100010	B776/777 Set 71 Planning and Engineering	58	01FEB01	02MAY01	196							
D5J71000020	B776/777 Set 71 Proj Specif Long Lead Procurem't	56	03MAY01	31JUL01	196							
D5J71000030	B776/777 Set 71 Isolation and Containment	26	01AUG01	11SEP01	196							
D5J71000040	B776/777 Set 71 Dismantlement Tasks	58	01OCT01*	02JAN02	185							
D5J7100MF1	B776/777 Complete Set 71 Decommissioning	0		02JAN02	185							
1.1.06.12.04.72	B776/777 GLOVEBOX DRY AIR DRYING SYSTEM 2D											
D5J7200MS1	B776/777 Start Set 72 Decommissioning	0	01FEB01*		196							
D5J7200010	B776/777 Set 72 Planning and Engineering	58	01FEB01	02MAY01	196							
D5J72000020	B776/777 Set 72 Proj Specif Long Lead Procurem't	56	03MAY01	31JUL01	196							
D5J72000030	B776/777 Set 72 Isolation and Containment	26	01AUG01	11SEP01	196							
D5J7200040	B776/777 Set 72 Dismantlement Tasks	58	01OCT01*	02JAN02	185							

BL05:W035



Project Start 01OCT97
 Project Finish 23SEP05
 Data Date 01OCT98
 Run Date 11OCT98

© Primavera Systems, Inc.

KAISER-HILL COMPANY
CLOSURE PROJECT BASELINE SCHEDULE
BUILDING 776/777 CLOSURE PROJECT

Sheet 25 of 33

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish	Total Float	FY99	FY00	FY01	FY02	FY03	FY04	FY05
D5J7200MF1	B776/777 Complete Set 72 Decommissioning	0		02JAN02	185							
1.1.06.12.04.73 B776/777-REMAINDER OF 2D FLOOR EQUIPMENT N												
D5J7300MS1	B776/777 Set 73 Decommissioning	0	01FEB01*		196							
D5J7300010	B776/777 Set 73 Planning and Engineering	58	01FEB01	02MAY01	196							
D5J7300020	B776/777 Set 73 Proj Specif Long Lead Procurem't	56	03MAY01	31JUL01	196							
D5J7300030	B776/777 Set 73 Isolation and Containment	26	01AUG01	11SEP01	196							
D5J7300040	B776/777 Set 73 Dismantlement Tasks	58	01OCT01*	02JAN02	185							
D5J7300MF1	B776/777 Complete Set 73 Decommissioning	0		02JAN02	185							
1.1.06.12.04.74 B776/777-BUILDING 702, 712, AND 712A												
D5J7400MS1	B776/777 Set 74 Decommissioning	0	24DEC01*		397							
D5J7400010	B776/777 Set 74 Planning and Engineering	35	24DEC01	18FEB02	397							
D5J7400030	B776/777 Set 74 Isolation and Containment	15	19FEB02	12MAR02	397							
D5J7400040	B776/777 Set 74 Dismantlement Tasks	71	13MAR02	02JUL02	397							
D5J7400MF1	B776/777 Complete Set 74 Decommissioning	0		02JUL02	397							
1.1.06.12.04.75 B776/777-BUILDING 781												
D5J7500MS1	B776/777 Set 75 Decommissioning	0	01OCT02*		122							
D5J7500010	B776/777 Set 75 Planning and Engineering	58	01OCT02	02JAN03	122							
D5J7500020	B776/777 Set 75 Proj Specif Long Lead Procurem't	56	06JAN03	01APR03	122							
D5J7500030	B776/777 Set 75 Isolation and Containment	20	02APR03	01MAY03	122							
D5J7500040	B776/777 Set 75 Dismantlement Tasks	30	02MAY03	18JUN03	122							
D5J7500MF1	B776/777 Complete Set 75 Decommissioning	0		18JUN03	122							
1.1.06.12.04.76 B776/777-BUILDING 701												
D5J7600MS1	B776/777 Set 76 Decommissioning	0	01OCT02*		208							
D5J7600010	B776/777 Set 76 Planning and Engineering	58	01OCT02	02JAN03	208							
D5J7600020	B776/777 Set 76 Proj Specif Long Lead Procurem't	20	06JAN03	04FEB03	208							
D5J7600030	B776/777 Set 76 Isolation and Containment	26	19JUN03	30JUL03	122							
D5J7600040	B776/777 Set 76 Dismantlement Tasks	30	31JUL03	17SEP03	122							
D5J7600MF1	B776/777 Complete Set 76 Decommissioning	0		17SEP03	122							

BL05:W035

Project Start 01OCT97
Project Finish 23SEP05
Date Date 01OCT98
Run Date 11OCT98

Early Bar
Progress Bar
Critical Activity

© Primavera Systems, Inc.

KAISER-HILL COMPANY
CLOSURE PROJECT BASELINE SCHEDULE
BUILDING 776/777 CLOSURE PROJECT

Sheet 26 of 33

CLOSURE

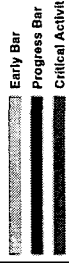
KAISER-HILL

222

ROCKY FL CLOSURE PROJECT

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish	Total Float	FY99	FY00	FY01	FY02	FY03	FY04	FY05
1.1.06.12.04.77 B7767-CHILLERS #2 AND #3												
D5J7700MS1	B7767777 Start Set 77 Decommissioning	0	01FEB01*		196							
D5J7700010	B7767777 Set 77 Planning and Engineering	58	01FEB01	02MAY01	196							
D5J7700020	B7767777 Set 77 Proj Specif Long Lead Procurem't	56	03MAY01	31JUL01	196							
D5J7700030	B7767777 Set 77 Isolation and Containment	26	01AUG01	11SEP01	196							
D5J7700040	B7767777 Set 77 Dismantlement Tasks	58	01OCT01*	02JAN02	185							
D5J7700MF1	B7767777 Complete Set 77 Decommissioning	0		02JAN02	185							
1.1.06.12.04.78 B7767-MISC. UNUSED PIPE												
D5J7800MS1	B7767777 Start Set 78 Decommissioning	0	01OCT01*		191							
D5J7800010	B7767777 Set 78 Planning and Engineering	57	01OCT01	31DEC01	191							
D5J7800020	B7767777 Set 78 Proj Specif Long Lead Procurem't	56	02JAN02	28MAR02	285							
D5J7800030	B7767777 Set 78 Isolation and Containment	60	02JAN02	04APR02	191							
D5J7800040	B7767777 Set 78 Dismantlement Tasks	110	05APR02	26SEP02	191							
D5J7800MF1	B7767777 Complete Set 78 Decommissioning	0		26SEP02	191							
1.1.06.12.04.79 B7767-CRITICALITY SYSTEMS												
D5J7900MS1	B7767777 Start Set 79 Decommissioning	0	05MAR02*		183							
D5J7900010	B7767777 Set 79 Planning and Engineering	58	05MAR02	03JUN02	183							
D5J7900020	B7767777 Set 79 Proj Specif Long Lead Procurem't	56	04JUN02	29AUG02	183							
D5J7900030	B7767777 Set 79 Isolation and Containment	26	17FEB03	26MAR03	80							
D5J7900040	B7767777 Set 79 Dismantlement Tasks	37	27MAR03	22MAY03	80							
D5J7900MF1	B7767777 Complete Set 79 Decommissioning	0		22MAY03	80							
1.1.06.12.04.80 B7767-ZONE 1												
D5J8000MS1	B7767777 Start Set 80 Decommissioning	0	15OCT01*		34							
D5J8000010	B7767777 Set 80 Planning and Engineering	58	15OCT01	16JAN02	34							
D5J8000020	B7767777 Set 80 Proj Specif Long Lead Procurem't	56	17JAN02	15APR02	34							
D5J8000030	B7767777 Set 80 Isolation and Containment	73	05JUN02	30SEP02	2							
D5J8000040	B7767777 Set 80 Dismantlement Tasks	148	01OCT02	22MAY03	2							
D5J8000MF1	B7767777 Complete Set 80 Decommissioning	0		22MAY03	2							

BL05:W035



Project Start 01OCT97
Project Finish 23SEP05
Date Date 01OCT98
Run Date 11OCT99

© Primavera Systems, Inc.

KAISER-HILL COMPANY
CLOSURE PROJECT BASELINE SCHEDULE
BUILDING 776777 CLOSURE PROJECT

Sheet 27 of 33

CLOSURE KAISER-HILL

223

ROCKY FLATS CLOSURE PROJECT

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish	Total Float	FY99	FY00	FY01	FY02	FY03	FY04	FY05
DSJMILE405	B7767777 Zone 1 Ventilation Shutdown	0		22MAY03	3							
1.1.06.12.04.81 B7767-CARGOS												
DSJ8100MS1	B7767777 Start Set 81 Decommissioning	0	15APR02*		172							
DSJ8100010	B7767777 Set 81 Planning and Engineering	58	15APR02	15JUL02	172							
DSJ8100020	B7767777 Set 81 Proj Specif Long Lead Procurem't	48	16JUL02	30SEP02	172							
DSJ8100030	B7767777 Set 81 Isolation and Containment	26	18FEB03*	27MAR03	86							
DSJ8100040	B7767777 Set 81 Dismantlement Tasks	30	31MAR03	14MAY03	86							
DSJ8100MF1	B7767777 Complete Set 81 Decommissioning	0		14MAY03	86							
1.1.06.12.04.82 B7767-BUILDING SHELL												
DSJ8200MS1	B7767777 Start Set 82 Decommissioning	0	25OCT01*		0							
DSJA100002	Perform Final Building Surveys for B7767777	115	25OCT01	29APR02	0							
DSJA100005	Prep Procurement Pkg for Demo Plan Preparation	21	17JAN02	19FEB02	6							
DSJA100MS1	Issue Procurement Pkg RFP for B7767777 Demo Plan	0		19FEB02	6							
DSJA100010	Vendors Respond to RFP for Demolition Plan Prep	38	20FEB02	18APR02	6							
DSJA100MS2	Award Subcontract for Demolition Plan Preparation	0		18APR02	6							
DSJA100003	Prep/Review/Approve B7767777 Demolition Survey Plan	113	30APR02	24OCT02	0							
DSJA100015	Develop B7767777 Demolition Plan	171	30APR02	29JAN03	0							
DSJA100MS3	Submit B7767777 Demolition Plan to DOE	0		29JAN03	0							
DSJA100020	DOE Review and Incorporate Comments into Demo Plan	19	30JAN03	27FEB03	0							
DSJA100MS4	Submit B7767777 Demo Plan to Regulators (DOE)	0		27FEB03	0							
DSJA100025	Regulators Review/Comment on B7767777 Demo Plan	39	03MAR03	30APR03	0							
DSJA100035	Purchase and Install B7767777 Containment System	95	03MAR03	29JUL03	0							
DSJA100MS5	Receive Regulators Comments- B7767777 Demo Plan	0		30APR03	0							
DSJA100022	Decontaminate Second Floor B7767777	57	30APR03	29JUL03	39							
DSJA100030	Incorporate Regulators Comments into Demo Plan	56	01MAY03	29JUL03	0							
DSJA100032	Prep/Issue Demo RFP, Receive/Review Submittals	56	01MAY03	29JUL03	0							
DSX71357	Compl B776777 PWT SN Flow/Transfer Utility Water	0		02MAY03	93							
DSJA100MS6	B7767777 Demolition Plan Approved	0		29JUL03	0							

Project Start

01OCT97

Project Finish

23SEP05

Date Date

01OCT98

Run Date

11OCT99

Early Bar

Progress Bar

Critical Activity

01OCT97

23SEP05

01OCT98

11OCT99

BL05:W035

KAISER-HILL COMPANY

CLOSURE PROJECT BASELINE SCHEDULE

BUILDING 7767777 CLOSURE PROJECT

Sheet 26 of 33

CLOSURE KAISER-HILL

224

ROCKY FL CLOSURE PROJECT

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish	Total Float	FY99	FY00	FY01	FY02	FY03	FY04	FY05
D5JA100MS7	Award B776777 Demolition Contract	0		28JUL03	0							
D5JA100036	Mobilize and Prepare for B776777 Demolition	39	30JUL03	30SEP03	0							
D5JA100040	Demolish B776777 and Out Buildings	114	01OCT03	31MAR04	0							
D5JMLE14	Complete B776777 Demolition	0		31MAR04	0							
D5J4006000	WAD 35 B776777 - Finish Decommissioning (MR6)	0		31MAR04	511							
D5J4006M50	D&D Complete B7767	0		31MAR04	511							
D5J8306D3	B776777 Prep/Rev/Issue Final Completion Report	55	01APR04	25JUN04	570							
1.1.06.12.04.83 B7767-ZONE AND BUILDING UTILITIES												
D5J8300MS1	B776777 Start Set 83 Decommissioning	0	01OCT01*		129							
D5J8300010	B776777 Set 83 Planning and Engineering	58	01OCT01	02JAN02	129							
D5J8300020	B776777 Set 83 Proj Specif Long Lead Procurem't	56	03JAN02	01APR02	129							
D5J8300030	B776777 Set 83 Isolation and Containment	82	01OCT02*	10FEB03	15							
D5J8300040	B776777 Set 83 Dismantlement Tasks	95	04DEC02	02MAY03	15							
D5J8300MF1	B776777 Complete Set 83 Decommissioning	0		02MAY03	15							
1.1.06.12.04.84 B776777 SET 84 BURIED EQMT & TAM FLOORS												
D5J8400MS1	B776777 Start Set 84 Decommissioning	0	01OCT01*		0							
D5J8400010	B776777 Set 84 Planning and Engineering	58	01OCT01	02JAN02	0							
D5J8400020	B776777 Set 84 Proj Specif Long Lead Procurem't	68	03JAN02	18APR02	0							
D5J8400040	B776777 Set 84 Dismantlement Tasks (1st 1/2)	102	19APR02	30SEP02	0							
D5J8400045	B776777 Set 84 Dismantlement Tasks (2d 1/2)	189	01OCT02	29JUL03	0							
D5J8400MF1	B776777 Complete Set 84 Decommissioning	0		29JUL03	0							
1.1.06.12.04.8A B7767-DECOM PLNG & PROJECT MGMT												
D5J0001000	Initiate B776777 Decommissioning	0	04OCT99		0							
D5JDELE172	B776777 Start D&D	0	04OCT99*		0							
D5J00AA010	FY-00 B776777 Decommissioning Project Mgmt	227	04OCT99	28SEP00	1							
D5SBIRDMS4	B776777 Hard Side SRU BIO Changes Complete	0		30NOV99	0							
D5SBIRDMS2	B776777 Hard Side SRU Operational Room 430	0		15DEC99	0							
D5STECHMS1	B776777 Technology Demo BIO Changes Complete	0		09MAR00	1							

Sheet 29 of 33

KAISER-HILL COMPANY
CLOSURE PROJECT BASELINE SCHEDULE
BUILDING 776777 CLOSURE PROJECT

CLOSURE KAISER-HILL
2006 225
ROCKY FLATS CLOSURE PROJECT

Project Start	01OCT97
Project Finish	23SEP05
Date Date	01OCT98
Run Date	11OCT99

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish	Total Float	FY99	FY00	FY01	FY02	FY03	FY04	FY05
D5STECHMS2	B776/777 Technology Demonstration Complete	0		10APR00	1							
D5J0SUPERB	99/00-SS07.5b Complete	0		30JUN00	0							
D5J00AA110	FY-01 B776/777 Decommissioning Project Mgmt	227 02OCT00	27SEP01		1							
D5J00AA210	FY-02 B776/777 Decommissioning Project Mgmt	228 01OCT01	30SEP02		1							
D5J00AA310	FY-03 B776/777 Decommissioning Project Mgmt	228 01OCT02	30SEP03		1							
D5J00AA410	FY-04 B776/777 Decommissioning Project Mgmt	228 01OCT03	29SEP04		1							
1.1.06.12.04 CA B776/777 CLUSTER CLOSURE ACTIVITIES												
D5K5007CC0	WAD 35 B776/777 - Cluster Closure Activities	114 01APR04	29SEP04		511							
1.1.06.12.04 SR-01 B776/777 ROBOTIC SIZE REDUCTION SYSTEM												
D5RRSRU110	Remote Robotic Size Reduction Facility Modifcat	97 04OCT99*	07MAR00		10							
D5RRSRU120	Remote Robotic Size Reduction Phase I - Design	99 04OCT99*	09MAR00		0							
D5RRSRU100	Remote Robotic Size Reduction Project Management	227 04OCT99*	28SEP00		1							
D5RRSRU130	R-Robotic SRU Phase II - Demonstration	87 21OCT99*	09MAR00		0							
D5RRSRUMS1	Remote Robotic SRU - Vendor Submit 90% Design Pk	0	05NOV99		0							
D5RRSRUMS2	Remote Robotic SRU - Final Design Approved	0	29NOV99		0							
D5RRSRU180	Remote Robotic SRU Phase IV Startup in B776/777	141 30NOV99	11JUL00		0							
D5RRSRU160	Remote Robotic SRU - RFETS Procedure Development	105 14DEC99	25MAY00		0							
D5RRSRU150	Remote Robotic SRU - BIO Update	43 24FEB00	01MAY00		0							
D5RRSRU170	Remote Robotic SRU - RFETS Training	60 24FEB00	25MAY00		0							
D5RRSRUMS3	Remote Robotic SRU - Complete Offsite Demonstration	0	09MAR00		0							
D5RRSRU140	Remote Robotic SRU Phase III RFETS Installation	28 10MAR00	21APR00		0							
D5RRSRUMS4	Remote Robotic SRU - Unit Received at RFETS	0	24MAR00		0							
D5RRSRUMS5	Remote Robotic SRU - Comp System Installation	0	21APR00		0							
D5RRSRUMS9	Remote Robotic SRU - BIO Update Complete	0	01MAY00		0							
D5RRSRUMS6	Remote Robotic SRU - Complete Cold Startup	0	05MAY00		0							
D5RRSRUMS7	Remote Robotic SRU - Complete Hot Startup	0	19JUN00		0							
D5RRSRUMS8	Remote Robotic SRU - Begin Full Scale Operations	0	11JUL00		0							
D5RRSRU190	Remote Robotic SRU - Final Pymt	51 12JUL00	28SEP00		0							

Project Start 01OCT97
Project Finish 23SEP05
Data Date 01OCT98
Run Date 11OCT99

BL05:W035

Early Bar
Progress Bar
Critical Activity

KAISER-HILL COMPANY

CLOSURE PROJECT BASELINE SCHEDULE

BUILDING 776/777 CLOSURE PROJECT

Sheet 30 of 33

CLOSURE

KAISER-HILL

226

ROCKY FLA SURE PROJECT

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish	Total Float	FY99	FY00	FY01	FY02	FY03	FY04	FY05
D5RRSRU200	FY01 Remote Robotic Size Reduction Maintenance	227	02OCT00	27SEP01	1							
D5RRSRU300	FY02 Remote Robotic Size Reduction Maintenance	228	01OCT01	30SEP02	1							
D5RRSRU400	FY03 Remote Robotic Size Reduction Maintenance	228	01OCT02	30SEP03	1							
1.1.06.12.04 SR.02 B776/777 HARD SIDED SIZE REDUCTION SYSTE												
D5SBRD050	B776/777 Hard Side SRU - Preliminary Engineering	19	01SEP99*	30SEP99	0							
D5SBRD140	B776/777 Hard Side SRU Procure/Install	36	04OCT99	30NOV99	0							
D5SBRD145	B776/777 Hard Side SRU BIO Update	36	04OCT99	30NOV99	0							
D5SBRD150	B776/777 Hard Side SRU Procedure Development	36	04OCT99	30NOV99	0							
D5SBRD100	B776/777 Hard Side SRU Project Mgmt	45	04OCT99	14DEC99	0							
D5SBRDMS1	B776/777 Hard Side SRU - Unit Received at RFETS	0		18OCT99	0							
D5SBRD130	B776/777 Hard Side SRU Facility Modifications	26	19OCT99	30NOV99	0							
D5SBRD160	B776/777 Hard Side SRU Training	26	19OCT99	30NOV99	0							
D5SBRDMS3	B776/777 Hard Side SRU Unit Installatn Complete	0		30NOV99	0							
D5SBRD170	B776/777 Hard Side SRU Readiness Demonstration	10	01DEC99	15DEC99	0							
1.1.06.12.04 SR.03 B776/777 D&O TECHNOLOGY DEMONSTRATIONS												
D5STECH140	B776/777 Technology Demo Procedure Development	50	14DEC99	01MAR00	1							
D5STECH100	B776/777 Technology Demo SRU Project Mgmt	52	14DEC99	08MAR00	1							
D5STECH130	B776/777 Technology Demonstration BIO Update	55	14DEC99	09MAR00	1							
D5STECH120	B776/777 Technology Demonstration Procurement	40	21DEC99	23FEB00	1							
D5STECH110	B776/777 Facility Mgmt for Technology Demo	58	21DEC99	22MAR00	1							
D5STECH150	B776/777 Technology Demonstration Training	13	02MAR00	22MAR00	1							
D5STECH160	B776/777 Technology Demonstration Readiness Demo	12	23MAR00	10APR00	1							
1.1.06.12.05 776/777 CLUSTER CLOSURE												
D5FDELES60	Complete B776/777 Closure	0		29SEP04	511							
1.1.06.12.06 REMEDIATE/CONTAIN 776/777 CLUSTER HIGH R												
D5RF50476	VUL RFSW77604 Fire protection program weakness	0		28FEB00	405							
D5F2042801	VUL RFP776A BREACHED PITS IN VAULT	0		28SEP01	1							
D5RF776001	VUL RFT776/77701 plastic contact w/ Pu cont HEU M	0		28SEP01	1							

KAISER-HILL COMPANY
CLOSURE PROJECT BASELINE SCHEDULE
BUILDING 776/777 CLOSURE PROJECT

BL05:W035

Project Start	01OCT97	Early Bar
Project Finish	23SEP05	Progress Bar
Data Date	01OCT99	Critical Activity
Run Date	11OCT99	

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish	Total Float	FY99	FY00	FY01	FY02	FY03	FY04	FY05
D5RF776002	VUL RFP77602 AB Doc not include 776 HazardOp	0		28SEP01	1							
D5RF77603	VUL RFP77603 Storage Pu solution in plastic	0		28SEP01	1							
D5RF77613	VUL RFP77613 Inventory delta due to holdup	0		28SEP01	1							
D5RF77602	VUL RFP77602 Crit safety inst weakness/vul	0		28SEP01	1							
D5RF77603	VUL RFP77603 Layoffs/loss of exp personnel	0		28SEP01	1							
D5RF77605	VUL RFP77605 Lack cont fire water runoff cont	0		28SEP01	1							
D5RF77607	VUL RFP77607 Crit safe controls for mtl	0		28SEP01	1							
D5RF77608	VUL RFP77608 Emp aware fissile mtl presence	0		28SEP01	1							
D5MF7760H	VUL RFP7760H RES WASTE DRUMS BLOCKING EGRES	0		30SEP02	1,551							
D5MF7760N	VUL RFP7760N RES WASTE DRUMS IN HALLWORK A	0		30SEP02	1,551							
D5MF77606	VUL RFP77606 BREACH OF MATL STORAGE CONTAINERS	0		30SEP02	1,551							
D5MF77607	VUL RFP77607 MATL FIRE IN RES. STOR. CONTAINERS	0		30SEP02	1,551							
D5ER673100	SAP Preparation - IHSS Group 700-3	60	03OCT02	30DEC02	0							
D5ER673110	SAP Approval by Agencies - IHSS Group 700-3	0		30DEC02	0							
D5ER673120	Procurement and Field Prep - IHSS Group 700-3	15	31DEC02	21JAN03	0							
D5ER673130	Contract Award - IHSS Group 700-3	0		21JAN03	0							
D5ER673140	Readiness Assessment - IHSS Group 700-3	15	22JAN03	11FEB03	0							
D5ER673150	Field Sampling, Lab Analysis - IHSS Group 700-3	75	12FEB03	28MAY03	0							
D5ER673160	Data Collection Completed - IHSS Group 700-3	0		28MAY03	0							
D5ER673170	Prepare Summary/NFA - IHSS Group 700-3	90	29MAY03	03OCT03	0							
D5ER673180	Prepare Decision Document - IHSS 700-3	135	11JUL03	22JAN04	0							
D5ER673200	Decision Document Approval - IHSS Group 700-3	0		22JAN04	0							
D5ER673210	Procurement and Field Prep - IHSS Grouping 700-3	214	23JAN04	22NOV04	0							
D5RFP776A	VUL RFP776A Emp exposure alarm sys/high noise	0		31MAR04	1,003							
D5RFP776D	VUL RFP776D Rubber Gloves/plastic bags on GBs	0		31MAR04	1,003							
D5RFP776E	VUL RFP776E Contamination from out use equip	0		31MAR04	1,003							
D5RFP776F	VUL RFP776F Age/limited MC&A counting equip	0		31MAR04	1,003							

Project Start: 01OCT97
Project Finish: 23SEP05
Data Date: 01OCT98
Run Date: 11OCT98

BL05:W035

Legend:
 Early Bar
 Progress Bar
 Critical Activity

Sheet 32 of 33

CLOSURE KAISER-HILL
CLOSURE PROJECT BASELINE SCHEDULE
BUILDING 776/777 CLOSURE PROJECT

2006 228
 ROCKY FL CLOSURE PROJECT

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish	Total Float	FY99	FY00	FY01	FY02	FY03	FY04	FY05
D5RFP5776Q	VUL RFP5776Q Emp exposure due Cit/un-ID source	0		31MAR04	1,003							
D5ER673220	Contract Award Action - IHSS Group 700-3	0		22NOV04	0							
D5ER673240	Readiness Assessment - IHSS Group 700-3	22	23NOV04	27DEC04	0							
D5ER673250	Remedial Action - IHSS Grouping 700-3	160	28DEC04	11AUG05	0							
D5LMILE435	B776777 Cluster Complete IHSS/UBC Remediation	0		11AUG05	0							
D5ENDPBD19	Complete PBD 019 - B776777 Cluster Closure Proj	0		11AUG05	350							
D5ENDWAD35	Complete WAD35 - B776777 Cluster Closure Proj	0		11AUG05	350							
D5ER673270	Prepare Closeout Report - IHSS Group 700-3	30	12AUG05	23SEP05	280							
D5ER673280	Closeout Rpt Submitted - IHSS Group 700-3	0		23SEP05	280							

BL05:W035



Project Start 01OCT97
Project Finish 23SEP05
Data Date 01OCT98
Run Date 11OCT99

© Primavera Systems, Inc.

Sheet 33 of 33

KAISER-HILL COMPANY
CLOSURE PROJECT BASELINE SCHEDULE
BUILDING 776/777 CLOSURE PROJECT

CLOSURE KAISER-HILL

229

ROCKY FLATS CLOSURE PROJECT

This page intentionally left blank

Appendix E - Building 776/777 Closure Project ARARs

REQUIREMENT	CITATION	COMMENT
AIR QUALITY		
Emission Controls for Particulates, Smokes, Carbon Monoxide, and Sulfur	5 CCR 1001-3 Reg. 1	Control of emissions for smoke, particulate, and volatiles of concern. Implemented for construction activities, haul roads, haul trucks, demolition activities
Emissions of Volatile Organic Compounds	5 CCR 1001-9 Reg.7	
Air Pollution Emission Notice (compliance with National Ambient Air Quality Standards [NAAQS])	5 CCR 1001-3 Reg. 3	Air Pollution Emission Notices are used by the State to help determine State compliance with the NAAQS.
Control of Hazardous Air Pollutants	5 CCR 1001-10 Reg. 10	Regulated radionuclide emissions from DOE facilities with a limit of ten millirem (mrem) per year. Site Standard.
National Emission Standards for Emissions of Radionuclides Other than Radon from DOE Facilities (compliance with NESHAP)	40 CFR 61 Subpart H	
Ambient Air Quality Standards (compliance with NAAQS)	5 CCR 1001-14	Maintain quality of ambient air for criteria pollutants
Control of Hazardous Air Pollutants (asbestos)	5 CCR 1001-10 Reg. 8	Standards for demolition, storage, and handling of asbestos containing material; emission standards and work place practice requirements; implemented through specific operational directions in IWCPs.
Control of Hazardous Air Pollutants	5 CCR 1001-10 Reg. 8	Implemented if the remedial action involves a specific regulated pollutant (e.g., lead).
Control of Emission Ozone Depleting Compounds	5 CCR 1001-19 Reg. 15	Ensure refrigerants are disposed of properly. Approved vessel recovery method must be used.

Appendix E - Building 776/777 Closure Project ARARs

REQUIREMENT	CITATION	COMMENT
WATER QUALITY		
EPA Administered Permit Programs: The National Pollutant Discharge Elimination System (NPDES)	40 CFR Part 122 40 CFR Part 125 5 CCR 1002-8	Requirements for discharge of storm water or treated wastewater into surface water bodies. Criteria and standards for the NPDES. Identify and protect all connections to the sanitary collection system.
SOLID (SANITARY) WASTE		
Solid Waste Disposal Sites and Facilities	6 CCR 1007-2	
Definitions	Section 1.2	"Recyclable materials" means any type of discarded or waste material that is not regulated under Section 25-8-205(1)(e), C.R.S., and can be reused, remanufactured, reclaimed, or recycled.
Exemptions	Section 1.4.3	This is the exemption for recyclable material.

Appendix E - Building 776/777 Closure Project ARARs

REQUIREMENT	CITATION	COMMENT
RESOURCE CONSERVATION AND RECOVERY ACT (RCRA)		
Generator Standards	6 CCR 1007-3 Part 262 (40 CFR Part 262)	
Hazardous waste determinations	.11	Persons who generate solid wastes are required to determine if the wastes are hazardous according to 6 CCR 1007-3 Parts 261, 267, 279 [40 CFR Parts 261, 266, and 279]
Hazardous waste accumulation areas	34 (a)(1)(i),(ii),(iv, excluding A & B); (a)(3); (a)(4); (c)(1)	Persons who accumulate hazardous waste in containers or tanks must manage the waste in a manner that protects human health and the environment.
General Facility Standards	6 CCR 1007-3 Part 264, Subpart B [40 CFR Part 264, Subpart B]	
Waste Analysis	.13 (a)	The owner/operator of a facility that stores, treats, or disposes of waste must verify the waste has been characterized adequately.
Security	.14	The owner/operator of a facility must prevent unauthorized access.
General Inspection Requirements	.15 (a), (c)	The owner/operator of a facility must inspect for malfunctions, deteriorations, and releases, and must remedy any deficiencies noted.
Personnel Training Requirements	.16 (a), (b), (c)	Personnel must be trained to maintain the facility in compliance with the regulations.
General Requirements for Ignitable, Reactive or Incompatible Wastes	.17 (a), (b)	Wastes will be managed to prevent accidental ignition or reaction of ignitable or reactive waste, or the mixing of incompatible waste.

Appendix E - Building 776/777 Closure Project ARARs

REQUIREMENT	CITATION	COMMENT
Preparedness and Prevention	6 CCR 1007-3 Part 264, Subpart C [40 CFR 264, Subpart C]	
Design and Operation of a Facility	.31	Design facilities to minimize the potential for fire, explosion or release of hazardous waste.
Required Equipment	.32	Facilities must be equipped with specified equipment to mitigate incidents, should they occur.
Testing and Maintenance of Equipment	.33	Equipment must be maintained.
Access to Communications or Alarm System	.34	Employees must have access to emergency communications when managing hazardous waste.
Required Aisle Space	.35	Aisle space must be maintained to allow unobstructed access to emergency personnel and emergency equipment.
Arrangement with Local Authorities	.37	The owner/operator must make arrangements with specified local emergency personnel.
Contingency Plan and Emergency Procedures	6 CCR 1007-3 Part 264, Subpart D [40 CFR Part 264, Subpart D]	
Purpose and Implementation	.51 (b)	Emergencies such as fire, explosion, or release of hazardous waste must be mitigated immediately.
Emergency Coordinator	.55	A designated employee is responsible for coordinating emergency response actions.
Emergency Procedures	.56 (a-i)	The Emergency Coordinator must take action in emergency situations
Ground-Water Monitoring	6 CCR 1007-3 Part 264, Subpart F [40 CFR Part 264, Subpart F]	The substantive portions of the groundwater monitoring ARARs for each CERCLA action will be incorporated into the Integrated Monitoring Plan (IMP)
Closure and Post-Closure	6 CCR 1007-3 Part 264, Subpart G [40 CFR Part 264, Subpart G]	
Closure Performance Standards	.111	The owner/operator must close the facility in a manner that protects human health and the environment.
Disposal or Decontamination of Equipment, Structures, or Soils	.114	All hazardous wastes and residues of hazardous waste must be disposed or decontaminated.

Appendix E - Building 776/777 Closure Project ARARs

REQUIREMENT	CITATION	COMMENT
Use and Management of Containers	6 CCR 1007-3 Part 264, Subpart I [40 CFR Part 264, Subpart I]	
Condition of Containers	.171	Containers must be maintained in good condition.
Compatibility of Waste in Containers	.172	Wastes must be compatible with containers.
Management of Containers	.173	Containers must be closed except when adding or removing waste.
Inspections	.174	Containers must be inspected weekly.
Containment	.175	Containment must be designed and operated as specified in these sections.
System Design and Operation	.176	
Ignitable and Reactive Wastes	.177	
Incompatible Wastes		
Closure	.178	Hazardous wastes and residues of hazardous waste must be removed or decontaminated from the unit and soils.
Air Emission Standards	.179	Hazardous wastes must be managed in accordance with AA, BB, CC, as appropriate.

Appendix E - Building 776/777 Closure Project ARARs

REQUIREMENT	CITATION	COMMENT
Tank Systems	6 CCR 1007-3 Part 264, Subpart J [40 CFR Part 264, Subpart J]	
Design and Installation of New Tank Systems or Components	.192 (a-f)	Tank systems must be designed to maintain their integrity when storing or treating hazardous waste.
Containment and Detection of Releases	.193 (a)(i)(1,2,3,5)	Secondary containment must be designed to contain and detect any releases from the tank system.
General Operating Requirements	.194 (a-c)	Tank systems must be maintained in good condition to prevent releases to the environment.
Inspections	.195 (b,c)	Inspections are conducted to identify any tank system integrity concern.
Response to Leaks or Spills and Disposition of Leaking or Unfit-for-Use Tank Systems	.196 (a-c),(e)	Actions must be taken as specified in this section.
Closure and Post-Closure Care	.197 (a,b)	During closure all hazardous waste and hazardous waste residues must be removed from the tank system.
Special Requirements for Ignitable and Reactive Wastes	.198	Ignitable or reactive waste must be managed as specified in this section.
Special Requirements for Incompatible Waste	.199	Incompatible waste must not be introduced into a tank system unless 264.17(b) is complied with.
Air Emission Standards	.200	All hazardous waste shall be managed in accordance with AA, BB, CC
Corrective Action for Solid Waste Management Units	6 CCR 1007-3 Part 264, Subpart S [40 CFR Part 264, Subpart S]	
Temporary Units	.553 (a-c)	Temporary units allow flexibility. Alternative compliance options are included in the waste management section of this CERCLA/RFCA decision document
Miscellaneous Units	6 CCR 1007-3 Part 264, Subpart X [40 CFR Part 264, Subpart X]	
Environmental Performance Standards	.601	Miscellaneous units must be designed, constructed, operated and maintained in a manner that protects groundwater, surface water, wetlands, soils, and air.
Monitoring, Analysis, Inspection, Response, Reporting, and Corrective Action	.602	Miscellaneous units must be managed to ensure compliance with 264.15 (inspections), 264.33 (testing and monitoring), 264.101 (corrective action for releases).

Appendix E - Building 776/777 Closure Project ARARs

REQUIREMENT	CITATION	COMMENT
Land Disposal Restrictions	6 CCR 1007-3 Part 268 [40 CFR Part 268]	
Dilution Prohibited as a Substitute for Treatment	.3	LDR determinations must be completed for all hazardous wastes generated.
LDR Determination (Determination if Hazardous Waste Meets the LDR Treatment Standards)	.7	Land disposal restrictions apply primarily to the off-site disposal actions proposed as part of the remedial activity. All of the applicable substantive and administrative regulatory requirements apply to off-site actions.
Special Rules for Wastes that Exhibit a Characteristic	.9 (a-c)	
Management of Universal Waste	6 CCR 1007-3 Part 273 [40 CFR Part 273]	Addresses the management of specifically identified batteries, pesticides, and thermostats.
Disposal, Dilution, and Treatment Prohibitions	.31	A large quantity handler of universal waste is prohibited from disposing, diluting, or treating universal waste, except during responses to releases.
Waste Management	.33	Management of universal waste must be conducted in accordance with this section.
Labeling and Marking	.34	Universal waste and the associated accumulation areas must be labeled and marked as defined in this section.
Employee Training	.36	Employees who must be trained on waste management requirements and on emergency procedures according to their responsibilities.
Response to Releases	.37	Universal waste handlers must contain releases of universal wastes, and must manage the resulting waste, as appropriate, in accordance with the hazardous waste regulations.

Appendix E - Building 776/777 Closure Project ARARs

REQUIREMENT	CITATION	COMMENT
Standards for the Management of Used Oil	6 CCR 1007-3 Part 279 [40 CFR Part 279]	
Used Oil Specifications	.11	Used oil burned for energy recovery must meet the specifications of this section
Prohibitions	.12	Used oil must not be stored in surface impoundments, be used as a dust suppressant, or be burned in unapproved units according to this section.
Hazardous Waste Mixing	.21	Used oil must be characterized and managed in accordance with 269.10 and this section.
Used Oil Storage	.22	Used oil must be managed in containers or tanks in a manner that protects human health and the environment. Releases must be cleaned up and steps must be taken to prevent re-occurrence.
On-Site Burning in Space Heaters	.23	Used oil may be used as fuel for space heaters if the gases are vented to ambient air, and the maximum capacity of the space heater is not more than 0.5 million Btu per hour.
Performance Standards for Above-Ground Tanks (AST)	7 CCR 1101-14 Part 3	ASTs must be designed, maintained, and operated to prevent releases to the environment.
Normal Venting for Aboveground Tanks	AST.31.5	
Emergency Relief Venting for Fire Exposure for Aboveground Tanks	AST.31.6	
Vent Piping for Aboveground Tanks	AST.31.7	
Tank Openings other than Vents for Aboveground Tanks	AST.31.8	
Standards for Piping, Valves, and Fittings	AST.32	
Operating Requirements for Above-Ground Tanks	7 CCR 1101-14 Part 4	
Collision Protection	AST.40	
Spill and Overfill Control (excluding reporting requirements), Remote Impounding, Secondary Containment	AST.41 (excluding reporting part of AST.41.1(e))	

Appendix E - Building 776/777 Closure Project ARARs

REQUIREMENT	CITATION	COMMENT
Operation and Maintenance of Corrosion Protection	AST.42	
Compatibility Requirements for all Tanks	AST.43	
Static Protection for all Tanks	AST.44	
Repairs Allowed (excluding requirement for approvals and inspections by State Oil Inspector)	AST.45 (excluding AST.45(b)(4))	
Out-of-Service, Closure or Change-in-Service	AST.46(c)(1-5)	
Release Detection	7 CCR 1101-14 Part 5 AST.5	
Release Response and Corrective Action	7 CCR 1101-14 Part 7	Under Site operating procedures, responses to leaks or spills is immediate, resulting in cessation of the release and an evaluation of the remediation that will be conducted immediately. Surface spills will be cleaned up and actions will be taken to prevent a release to surface water. Releases that impact soils or groundwater will be identified as a PAC, will be added to the ER Ranking List, and will be incorporated into the integrated Site remediation program.
Initial Response	AST.72(b), (c)	
Initial Abatement Measures	AST.73	
Repair or Closure Required	AST.74	
Oil Pollution Prevention	7 CCR 1101-14 Part 11	A SPCC plan is not required as an ARAR; however, the substantive requirements that are incorporated into and implemented as part of the SPCC plan are an ARAR. (e.g., Prediction of the direction, rate and flow of a release from an AST system will be known by the facility and will be available to emergency responders at the facility.)
Oil Pollution Prevention: Oil Pollution Prevention SPCC Plan Requirements	AST.112.7(c), (d), (e, 1-2, 4-5)	
TOXIC SUBSTANCES CONTROL ACT (TSCA) FOR PCBS		
PCB Use Authorizations	40 CFR 761.30	Lists authorized uses and use restrictions for PCBs
Marking Requirements	40 CFR 761.40 and .45	Labeling of PCBs and PCB storage Areas

Appendix E - Building 776/777 Closure Project ARARs

REQUIREMENT	CITATION	COMMENT
Disposal Requirements Applicability Disposal Requirements PCB Remediation Waste PCB Bulk Product Waste Disposal of R&D and Chemical Analyses wastes	40 CFR 761.50 40 CFR 761.60 40 CFR 761.61 40 CFR 761.62 40 CFR 761.64	
Storage Requirements Time limits Facility Criteria Temporary Storage Inspections Container Specifications PCB radioactive waste Marking Laboratory Sample Exemption from Manifesting	40 CFR 761.65	
TSCA Coordinated Approval	40 CFR 761.77	Institutionalizes EPA approval of PCB activities under TSCA when activities are being conducted under another waste management permit, or other decision document issued by EPA or pursuant to a State PCB waste management program
Decontamination Standards and Procedures Self-Implementing Decontamination Measurement-Based Decontamination	40 CFR 761.79	
PCB Spill Cleanup Requirements for PCB Spill Cleanup	40 CFR Subpart G	40 CFR 761 Subpart G is entitled PCB Spill Cleanup Policy and thus many of the sections, specifically for spills after May 4, 1987 are "To Be Considered"
Cleanup Site Characterization Sampling for PCB Remediation Waste	40 CFR Subpart N	Characterization requirements for cleanup of PCB remediation waste
Sampling Non-Porous Surfaces for Measurement-Based Use, Reuse, and On-Site Or Off-Site Disposal Under 761.61(a)(6) and Determination Under 761.79(b)(3)	40 CFR Subpart P	
Self-Implementing Alternative Extraction and Chemical Analysis Procedures for Non-Liquid PCB Remediation Waste Samples	40 CFR Subpart Q	Applicable procedures when using alternatives to required analytical methodology
Sampling Non-Liquid, Non-Metal PCB Bulk Product Waste for Purposes of Characterization for PCB Disposal in Accordance with 761.62, and Sampling PCB Remediation Waste Destined for Off-Site Disposal, in Accordance with 761.61	40 CFR Subpart R	Characterization requirements for PCB bulk product waste and PCB remediation waste when characterization for disposal is required
Double Wash/Rinse Method for Decontaminating Non-Porous Surfaces	40 CFR Subpart S	Referenced procedure from 761.79

Appendix E - Building 776/777 Closure Project ARARs

REQUIREMENT	CITATION	COMMENT
MIGRATORY BIRDS		
Protection of migratory birds through compliance with the Migratory Bird Treaty Act and Wildlife & Fisheries Act	50 CFR 10	Principally focuses on the taking and possession of birds and bird nests protected under this regulation. Enforcement is predicated on location of the project and time of year. Current list of protected birds is maintained by the Ecology Group.

This page intentionally left blank

**Comment Response Summary for the Final Draft (7/7/99) of the
Building 776/777 Decommissioning Operations Plan**

Revision 0
October 18, 1999

Reviewer	Comment No.	Sec./Page/Para.	Comment Description	Comment Resolution
CDPHE	1	p. 12	As written, the DOP does not provide for any form of demolition and that includes interior walls, which may be appropriate for removal during room SET D&D activities. We would have no objection to addition of provisions describing this selective removal of interior walls as determined by the collaborative IWCP process.	No change. Section 4.1 explains that room and room/equipment SETs include all equipment and instrumentation, tools, miscellaneous items, utilities below 8 feet, and interior walls. In addition, Section 4.11.2 states that room decommissioning activities may include removal of interior walls.
CDPHE	1	p. 12, para. 2	Delete "which may (emphasis added) include a modification to this DOP." Replace with "which will constitute a major modification to this DOP. In addition to the routine requirements for major modifications, this information on Building 776/777 demolition will be submitted for a public comment period equivalent to that for the initial Building 776/777 DOP." Demolition details are part of the total scope of the originally reviewed and approved DOP and, therefore, subject to the routine public comment process. It is essential to CDPHE that the understandable delay in planning the demolition phase of this regulated project not allow the required public comment on demolition to be omitted. Since even a major modification, per RFCA, does not require public comment, it is essential that the commitment to this be included in this original DOP.	The last sentence of this paragraph has been re-worded as follows: "This information will be provided in a subsequent decision document(s), which will constitute a major modification to this DOP. In addition to the routine requirements for major modifications, this information on Building 776/777 demolition will be submitted for a public comment period equivalent to that for the initial Building 776/777 DOP."

**Comment Response Summary for the Final Draft (7/7/99) of the
Building 776/777 Decommissioning Operations Plan**

Revision 0
October 18, 1999

Reviewer	Comment No.	Sec./Page/Para.	Comment Description	Comment Resolution
CDPHE	7a-b	p. 26	In previous discussions, DOE has stated that future and additional sampling and analysis of the buried equipment in and under Building 776/777 does not fall under the CERCLA requirement for regulatory approval of sampling and analysis plans. The state disagrees. To allow for timely progress on this decommissioning project the addition of the following language to the DOP will be acceptable: "Additional sampling and analysis plans for characterization of buried equipment within the Building 776/777 structure will be provided to the LRA for review and approval prior to such sampling. Work packages, currently undeveloped, for removal of equipment buried or cemented within the building structure will be shared with the regulators per the collaborative process."	The following language has been added to the first paragraph of Section 4.3.2.1: "Due to the sensitivity of this work, in-process characterization of buried equipment within the Building 776/777 structure will be provided to the LRA for review. Work packages, currently undeveloped, for removal of equipment buried or cemented within the building structure will be shared with the regulators per the consultative process."
CDPHE	8	p. 33	The term "and" is necessary between the two criteria for categorization of a material as sanitary waste in Section 4.4.1. If either criteria (a. surface contamination or b. volumetric contamination) is exceeded, the material cannot be disposed of in a sanitary landfill or free-released. As written, the section results in two statements, neither of which by itself is correct. The LRA would be amenable to other possible language changes which would clarify the invalid logic of the current wording.	The last two sentences of Section 4.4.1 have been combined to clarify that both the surface contamination and volumetric contamination limits must be met for the material to be free-released.

Appendix F
Comment Response Summary for the Final Draft (7/7/99) of the
Building 776/777 Decommissioning Operations Plan

Revision 0
 October 18, 1999

Reviewer	Comment No.	Sec./Page/Para.	Comment Description	Comment Resolution
CDPHE	15 a	p. 51	<p>The LRA, in prior comments, objected to the statement that information and commitments in this chapter originally on "Health, Safety, and the Environment" is non-enforceable. RFETS has responded by eliminating the term "environment" from this section, while maintaining the assertion that the information is non-enforceable. This is not the solution we envisioned when making the original comment. We do not believe that the DOP is the appropriate vehicle to discuss or make legal pronouncements on enforceability issues. If issues in this regard arise later (and hopefully they will not) they can be discussed, negotiated and resolved by legal staff separately. As a solution to this issue, we recommend that the phrase "Although not enforceable . . ." be deleted and replaced with a separate sentence acknowledging that "DOE is the lead agency responsible for enforcement of health and safety provisions."</p>	<p>The phrase "Although not enforceable . . ." has been deleted from the second sentence of the first paragraph of Sec. 5.0 and the following sentence has been added to the end of the paragraph: "DOE is the lead agency responsible for enforcement of H&S provisions." This responsibility is also included in Section 11.1.1.</p>

**Comment Response Summary for the Final Draft (7/7/99) of the
Building 776/777 Decommissioning Operations Plan**

Revision 0
October 18, 1999

Reviewer	Comment No.	Sec./Page/Para.	Comment Description	Comment Resolution
CDPHE	16	p. 61	Add to Section 5.1.4.1: "Prior to various phases of decommissioning, readiness reviews of infrastructure, procedures, and personnel will be completed by integrating contractor management. Upon satisfactory completion of these reviews, closure project personnel will be given permission to proceed with phases of the project. The LRA will be advised of the dates and times of these reviews and be provided full opportunity to oversee and collaborate with reviewers." Language of this nature was present in Draft E and needs to be reinserted.	The following language has been added to the end of Section 5.1.4.1: "The LRA will be advised of the dates and times of readiness determination activities and may participate in the readiness determination process per Section 11.1.3 of this DOP." The first part of the requested language is not necessary because the DOP already describes the readiness determination process. The second part of the requested language has been modified to be consistent with language agreed to by the parties prior to the public comment period (Section 5.1.3.1).
CDPHE	20	Sec. 7	I am told that legal staff of both parties agree that the ARARs section is incomplete and needs further legal review. 776 DOP approval will be conditional, based on further ARARs evaluations. As the only regulation applying to decommissioning of nuclear facilities, the NRC regulation on decommissioning appears to be relevant and appropriate. Add this to the ARARs chart. Additionally, CDPHE has included equivalent provisions within its own Rules and Regulations Pertaining to Radiation Control, 6 CCR 1007-1.1 et seq. reference to this should also be included as relevant and appropriate.	DOE Legal staff does not believe that the ARARs section is incomplete. In addition, DOE maintains its position that the NRC regulation quoted in the comment is not applicable or relevant and appropriate.

Appendix F
Comment Response Summary for the Final Draft (7/7/99) of the
Building 776/777 Decommissioning Operations Plan

Revision 0
October 18, 1999

Reviewer	Comment No.	Sec./Page/Para.	Comment Description	Comment Resolution
CDPHE	23, 24	pp. 113, 115	Why does RFETS resist the LRA request to notify us in the event of schedule and management changes. Isn't this notification consistent with the collaborative process?	The language in these sections is contained in the DPP; therefore, it has not been changed. However, new language has been added to state that schedule and organization changes will be shared with the LRA according to the "Timely Sharing of Information" section of the DPP (Section 1.1.1, paragraph [1]).
CDPHE	25 a	p. 116	Language on regulatory authority emphasizes RCRA authority and is light on decommissioning authority. We suggest the two be separated. Discuss RCRA authority in one paragraph and in a separate paragraph note that "CDPHE regulates decontamination and decommissioning."	This section has been re-worded to include the language from the Memorandum of Understanding that was entered into by DOE, EPA, CDPHE, and the DNFSB on February 15, 1996: CDPHE is the LRA for (1) regulation, oversight, and enforcement of RCRA/CHWA legal requirements for mixed waste; (2) regulation or oversight of D&D of fixed structures and equipment, dismantlement, demolition, and closure of RCRA TSD units; (3) oversight of LLW and regulation of LLM waste disposal on site or elsewhere in the State of Colorado; (4) regulation of RCRA corrective actions and lead oversight of CERCLA response actions. Each point is included in a separate paragraph.

**Comment Response Summary for the Final Draft (7/7/99) of the
Building 776/777 Decommissioning Operations Plan**

Revision 0
October 18, 1999

Reviewer	Comment No.	Sec./Page/Para.	Comment Description	Comment Resolution
CDPHE	28	pp. 135-187	Endpoints are often generically described in the "major endpoints" charts and this may lead to misunderstandings regarding acceptable completion of work SETs. For example, work sets generically include "control contamination" as an end point. CDPHE finds this end point unclear and, actually, not an end point but rather an activity that occurs throughout the D&D process. The DOP end point chart needs to better define the end point for this activity. CDPHE suggests that the end point be redefined as "remove all contamination and contaminated materials." This change in endpoint language will be needed selectively within most workset descriptions.	No change. The major endpoint for the initial version of the DOP is to have all equipment stripped out and all contamination either removed, fixed in place, or otherwise controlled in preparation for building demolition. Specific methods for achieving this major endpoint will be identified in individual IWCP work packages. The demolition phase of decommissioning will be addressed in a major modification to the DOP, which will be submitted for a public review period equivalent to that for the initial version of the DOP.
CDPHE	29	Sec. 4	"The overall goal of the Building 776/777 Closure Project is to have all buildings within the Cluster emptied and demolished to slab on grade, with subsurface penetrations capped." Is this truly the end-state for Building 776/777 and the Cluster facilities? Per recent discussions with Site representatives, isn't the Site's proposed plan to remove the slab and foundations to at least three feet below grade? Slab removal should be considered part of D&D vs environmental restoration (ER), especially in light of the buried equipment identified in Section 4.3.2.1 of this DOP. Note that CDPHE will soon transmit a proposed slab policy which will better define our expectations.	Management of the building slab(s) will be part of demolition; therefore, the first two sentences of Sec. 4.0 have been deleted and language has been added to clarify that the major modification to the DOP, which will cover demolition, will also cover management of the building slab(s).

Appendix F
Comment Response Summary for the Final Draft (7/7/99) of the
Building 776/777 Decommissioning Operations Plan

Revision 0
October 18, 1999

Reviewer	Comment No.	Sec./Page/Para.	Comment Description	Comment Resolution
CDPHE	30	Table 6	Several rooms (e.g., 134, 127, 430 et. al) have their proposed closure deferred until IHSS remediation. As written, IHSS remediation is to be performed following demolition. If this is true, how can closure of these rooms be deferred to IHSS remediation? Define when and how closure of these rooms will occur.	All RCRA units will be closed during decommissioning. Table 6 has been revised to show that these units will be closed by removal.
CDPHE	31	Sec. 4.5.1.2	The "debris rule" is applicable provided the equipment meets the definition of debris.	No change. As explained in the second sentence of this section, the "debris rule" applies to "unit equipment or structures that have no intended use or reuse and are slated for removal and discard." This is the definition of "debris."

**Comment Response Summary for the Final Draft (7/7/99) of the
Building 776/777 Decommissioning Operations Plan**

Revision 0
October 18, 1999

Reviewer	Comment No.	Sec./Page/Para.	Comment Description	Comment Resolution
CDPHE	32	4.5.2	<p>The revised DOP no longer requires submittal of a waste management plan. DOE's response to our previous comment stated that "elements of the waste management plan are now contained in Section 6 (of the DOP)." Section 6 fails to identify how waste will be managed (process v. remediation waste). Simply stating that process waste will be managed in accordance with CHWA/RCRA and remediation waste will be managed in accordance with CERCLA is unacceptable. To date, the Site has been unable to clearly define CERCLA remediation waste management requirements an operations level. The Site must develop an implementing procedure(s) clearly defining appropriate CERCLA management requirements (e.g., generation, storage, treatment, packaging, etc.). The issue of CERCLA vs RCRA waste management has been an issue the Site has failed to resolve over the past 6 months (specifically B771).</p> <p>I strongly recommend discussing this issue with B771 representatives in hopes of cooperatively generating specific operating procedures for building personnel to utilize (ideally site-wide). Once developed, this operating procedure should act as the major portion of a waste management plan for each building.</p>	<p>The Site is currently working on a site-wide strategy for managing process vs. remediation waste during decommissioning activities. Once that strategy is finalized, we will submit a minor modification to the DOP to include additional information on this issue, consistent with DPP requirements. Until that time, hazardous and mixed waste generated during decommissioning activities under this DOP will be managed as process waste in compliance with RCRA/CHWA, the CHWR, and the RCRA Part B Permit. The DOP has been revised to reflect this. The minor modification regarding the process vs. remediation waste strategy will be submitted by February 2000.</p>

Appendix F
Comment Response Summary for the Final Draft (7/7/99) of the
Building 776/777 Decommissioning Operations Plan

Revision 0
October 18, 1999

Reviewer	Comment No.	Sec./Page/Para.	Comment Description	Comment Resolution
CDPHE	33	Sec. 6.1.1.1	The DOP has deferred closure of the basement to remediation of the surrounding IHSSs. Elaborate on how the Site intends to deal with the slab/foundation as basement D&D vs the activities that will be deferred to environmental restoration (ER).	All RCRA units will be closed during decommissioning. The Building 776/777 slab(s) will be addressed during demolition. The final approach address the slab(s) is still to be determined. This information will be provided in a major modification to the DOP, which will be submitted for a public comment period equivalent to that for the initial version of the DOP.
CDPHE	34	Sec. 6.5	The DOP proposes the use of temporary units (TUs) for staging, storage, and treatment. Specifically, this section includes the following processes: size reduction, filtration of aqueous wastes, amalgamation of radioactive mercury, crushing of fluorescent bulbs, and waste solidification. What is the mechanism to authorize these activities? The Site's plan to utilize TUs must include the substantive requirements of Section 254.553(c) of the CHWR. The information currently included in this DOP is insufficient to authorize treatment in TUs. To utilize a TU, this information must either be included in the DOP or submitted to the Division separately. In addition, what advantage does the Site gain by utilizing a TU?	Section 6.5 has been revised to indicate that the Site will submit a minor modification to the DOP with additional information to authorize the use of TUs once the information is known and the Site has a need for the units. The minor modification will be submitted by February 2000.

**Comment Response Summary for the Final Draft (7/7/99) of the
Building 776/777 Decommissioning Operations Plan**

Revision 0
October 18, 1999

Reviewer	Comment No.	Sec./Page/Para.	Comment Description	Comment Resolution
EPA	GEN'L 1		Assuming the 2006 Plan becomes a reality, how will we modify the DOP? Major or minor modification?	All references to the "2010 Plan" have been changed to the "Closure Project Baseline" so that the DOP will remain current and will not require modifications when the plan changes. Schedules may change without modifying the DOP.
EPA	GEN'L 2		There is a concern that all the buildings within the Cluster are not being addressed in the DOP. However, another concern is that building 712a and B713a are not listed in the Facility Disposition Program Manual. This needs to be addressed.	The Executive Summary explains that the DOP is intended to address Type 2 and Type 3 buildings, only. The other buildings in the Cluster are anticipated to be Type 1 buildings, which do not require a decision document. If the other buildings are determined to be other than Type 1 buildings, the DOP will be modified to include them. In addition, Buildings 712, 712A, 713, and 713A are listed in Section 2 of the DOP.
EPA	GEN'L 3		The DOP has made reference to buried waste and waste that has been cemented over. All these areas must be removed before demolition. This is not referenced to under building contamination.	Sections describing buried equipment/waste have been revised to clarify that all equipment/waste will be removed during decommissioning (i.e., Section 4.3.2.1 and Section 4.11.6).

Appendix F
Comment Response Summary for the Final Draft (7/7/99) of the
Building 776/777 Decommissioning Operations Plan

Revision 0
 October 18, 1999

Reviewer	Comment No.	Sec./Page/Para.	Comment Description	Comment Resolution
EPA	GEN'L 4		The table for surface contamination guidelines is missing a unit in footnote 3 and 6.	We could not find the table or error referenced in this comment. Upon further discussion with EPA, it was determined that the comment should have read as follows: "The table showing release criteria for materials contaminated with radionuclides does not include footnotes from the source document (i.e., DOE Order 5400.5)." The referenced footnotes have been added to Table 5.
EPA	SPECIFIC 1	Sec. 2.3, p. 19	There are large quantities of waste containers in the building, yet there is no indication of where these containers will go. Could you provide the current plan for removal of these containers. Decisions?	No change. Section 6 describes how the existing waste inventory will be dispositioned. Pending off-site shipment, this waste will be stored in permitted storage areas (e.g., RCRA Units 371. and 707.1).

Appendix F
Comment Response Summary for the Final Draft (7/7/99) of the
Building 776/777 Decommissioning Operations Plan

Revision 0
October 18, 1999

Reviewer	Comment No.	Sec./Page/Paragraph	Comment Description	Comment Resolution
EPA	SPECIFIC 2	Sec. 4.1, p. 23	It sounds like one team could be mobilized and demobilized in one room 3 or 4 times before it is completely dispositioned. What happened to the "touch things once" that is being used in B771? This method sounds slow and costly.	No change. It is true that D&D teams may be mobilized and demobilized in one room 3 or 4 times. As discussed in Section 4.1.2, the decommissioning sequence begins with the removal of gloveboxes and B-boxes so that the Zone I ventilation can be removed. Process tanks will be removed during the same time frame as the gloveboxes and used as "fill in" work. After the gloveboxes, B-boxes, process tanks, and Zone I ventilation systems have been removed, the remaining room decommissioning activities will take place, to include the removal of interior walls, piping, ventilation, and electrical systems. This sequence is necessary to minimize worker exposures to radiological hazards.

Appendix F
Comment Response Summary for the Final Draft (7/7/99) of the
Building 776/777 Decommissioning Operations Plan

Revision 0
October 18, 1999

Reviewer	Comment No.	Sec./Page/Para.	Comment Description	Comment Resolution
EPA	SPECIFIC 3	Sec. 4.3.2.1, p. 26	Regarding the buried waste in and under Building 776/777: First, any contaminant that poses a threat to human health and the environment falls under the CERCLA statute and requires a sampling and analysis plan. Second, all buried waste must be addressed during decommissioning. Finally, the DOP should described how and when these investigation will take place. These investigation should be outlined in the schedule as well as the actual D&D work and removal of these wastes. How will these investigation be done? When in the process will this waste be addressed.	Section 4.3.2.1 has been re-worded to clarify that buried equipment (i.e., SET 84) will be removed before the building is demolished. Due to the sensitivity of this work, in-process characterization of buried equipment within the Building 776/777 structure will be provided to the LRA for review. IWCP work packages, currently undeveloped, for removal of equipment buried or cemented within the building structure will be shared with the regulators per the consultative process. The project schedule (Appendix D) shows when these activities are scheduled to take place.
EPA	SPECIFIC 4	Sec. 4.3.3.1, p. 29	It states that in-process characterization is based on process knowledge. This is an incorrect statement. In-process characterization is based on field samples and radiation survey measurements that are taken during the decommissioning process. Please rewrite.	This section has been re-worded to clarify that in-process characterization is based on process knowledge and field samples and/or radiation survey measurements.

**Comment Response Summary for the Final Draft (7/7/99) of the
Building 776/777 Decommissioning Operations Plan**

Revision 0
October 18, 1999

Reviewer	Comment No.	Sec./Page/Para.	Comment Description	Comment Resolution
EPA	SPECIFIC 5	Sec. 4.3.3.5, p. 32	Sampling should be done to confirm that radiation is not mixed with any asbestos containing material. What about the insulation in the walls?	No change. The entire Section 4.3.3 is intended to explain the in-process characterization activities. Each subsection addresses characterization for only the specific contaminant listed. All subsections must be used together for a complete characterization. The subsections are not meant to be mutually exclusive. Therefore, radiological contamination is addressed in its own subsection, not in the asbestos subsection. It is the Site's intent, however, to characterize for both, as necessary.
EPA	SPECIFIC 6	Sec. 4.11.6, p. 47	How are you addressing the H&S concerns for airborne Pu?	Neutron detectors (i.e., criticality detectors) and alpha monitors (i.e., Selective Alpha Air Monitoring System [SAAMS] and Continuous Alpha Monitoring System [CAMS]) provide continuous monitoring in Pu areas. In addition, D&D workers wear thermoluminescent dosimeters (TLD), which detect personnel exposure to neutrons, beta particles, and gamma rays. Additional requirements (e.g., the need for additional dosimetry) will be addressed by Radiological Engineering in individual IWCP work packages.

Appendix F
Comment Response Summary for the Final Draft (7/7/99) of the
Building 776/777 Decommissioning Operations Plan

Revision 0
 October 18, 1999

Reviewer	Comment No.	Sec./Page/Para.	Comment Description	Comment Resolution
EPA	SPECIFIC 7	Sec. 4.12, p. 47	In this section it discussed 4 Zone II plenum deluge tanks. Why aren't we removing all four of them? What are the contaminants and what are the concentration?	Section 4.1.2 has been clarified to indicate that all four tanks will be removed. Appendix A of the DOP and the Building 776/777 Reconnaissance Level Characterization Report (RLCR) contain information concerning associated contaminants.
EPA	SPECIFIC 8	Sec. 5.2, p. 65	Will there be neutron detectors used during D&D (i.e., neutron badges)?	As explained in the response to EPA Specific Comment #6 (above), the use of additional personnel dosimetry will be addressed by Radiological Engineering during the development of individual IWCP work packages.
EPA	SPECIFIC 9	Sec. 5.3, p. 65	How are you addressing the H&S concerns for airborne Pu?	DUPLICATE COMMENT - Please refer to the response to EPA Specific Comment #6 (above).

Appendix F

**Comment Response Summary for the Final Draft (7/7/99) of the
Building 776/777 Decommissioning Operations Plan**

Revision 0
October 18, 1999

Reviewer	Comment No.	Sec./Page/Para.	Comment Description	Comment Resolution
EPA	SPECIFIC 10	Sec. 6.2.5, p. 75	Leaking ballasts are considered PCB remediation waste. Interesting concept beryllium (Be) not considered hazardous waste. I did know that a known carcinogen is not considered hazardous. This state should be rewritten. In addition, all Be housekeeping standards need to be explained and used.	Section 6.2.5 has been clarified to distinguish between leaking ballasts (managed as PCB remediation waste) and non-leaking ballasts (managed as PCB bulk product waste). Be that is not in a powder form is not hazardous waste. As indicated in Section 4.3.3.7, areas where Be operations were performed have been documented in the RLCR. In-process characterization will be conducted in accordance with the RFETS Chronic Beryllium Disease Prevention Program, which includes Be housekeeping requirements.
EPA	SPECIFIC 11	Sec. 6.2.7, p. 76	Again, Be not considered hazardous waste. To my knowledge, we have not agreed to allow Be to be disposed of in a sanitary landfill. This needs further discussion.	Be that is not in a powder form is not hazardous waste. The last sentence of this section has been revised to state that "This waste category may include Be waste that is not considered hazardous waste."
EPA	SPECIFIC 12	Table 14, p. 77	How are you addressing pyrophoric concerns surrounding Pu and Uranium?	Pyrophoric materials are managed in accordance with Section 31.11 of the RFETS Health and Safety Practices (HSP) Manual. When appropriate, the applicable requirements will be included in individual IWCP work packages.
EPA	SPECIFIC 13	Sec. 7, p. 85	The ARARs section needs further discussion regarding authority.	DOE believes the ARARs section is complete.

Appendix F
Comment Response Summary for the Final Draft (7/7/99) of the
Building 776/777 Decommissioning Operations Plan

Revision 0
 October 18, 1999

Reviewer	Comment No.	Sec./Page/Para.	Comment Description	Comment Resolution
CITY OF BRMFLD	N/A	Sec. 4.3.3	IN-PROCESS KNOWLEDGE - Sec. 4.3.3 implies that in-process knowledge may be the only means of classifying some materials as non-contaminated. In-process knowledge is helpful, but should not be the only means of verifying that radiological contamination does not exist on materials and equipment removed from Building 776/777. Verification monitoring which includes some means of quantifying radiation levels must be employed.	This section has been re-worded to clarify that in-process characterization is based on process knowledge AND field samples and/or radiation survey measurements. As shown in Table 4 of the DOP, and described in Sections 4.3.3.1 through 4.3.3.7, in-process radiological surveys will be performed to verify contamination levels and to identify appropriate disposal paths; in-process Be surveys will be performed to verify Be contamination levels in Be storage, handling and production areas; and, where appropriate, in-process sampling will be performed to identify asbestos containing material, PCBs, and lead and other heavy metals.

Appendix F
Comment Response Summary for the Final Draft (7/7/99) of the
Building 776/777 Decommissioning Operations Plan

Revision 0
 October 18, 1999

Reviewer	Comment No.	Sec./Page/Para.	Comment Description	Comment Resolution
CITY OF BRMFLD	N/A	4.4.1	FREE-RELEASE CRITERIA - Please provide the excerpt from DOE Order 5400.5 that specifically provides the volume contamination threshold.	DOE Order 5400.5 defines the Allowable Total Residual Surface Contamination (ATRSC) release limits for material surfaces but it does not provide specific release limits for material volumes. However, during the course of the Building 779 Closure Project, the ATRSC limits are being applied to contaminated bulk or volume material, as follows: (1) for a given surface type, a sample is taken from a defined area, to the depth of the radioactive material present; (2) the sample is then analyzed for radioactive material indicative of RFETS (e.g., plutonium, americium, uranium); (3) the amount of radioactive material in the sample is distributed uniformly over the sample area so the amount of radioactive material present in the sample is in the units of dpm/100 cm ² ; and (4) the quantity of radioactive material is then compared with the ATRSC limits to determine whether it may be free-released. This method is conservative in that actual (This response is continued on the next page.)

Appendix F
Comment Response Summary for the Final Draft (7/7/99) of the
Building 776/777 Decommissioning Operations Plan

Revision 0
October 18, 1999

Reviewer	Comment No.	Sec./Page/Para.	Comment Description	Comment Resolution
CITY OF BRMF LD	N/A	4.4.1	FREE-RELEASE CRITERIA - (continued from previous page)	surface contamination values will be no greater than, and in almost all cases, much less than the calculated number. The method or methods to be applied to contaminated bulk or volume materials generated during the Building 776/777 Closure Project will be described in an upcoming revision to the Decontamination & Decommissioning Characterization Protocol (DDCP) and associated Pre-Demolition Survey Plan. The DDCP is being revised in consultation with EPA and CDPHE, per Section 2.3 of the Decommissioning Program Plan (DPP). When completed, the associated Pre-Demolition Survey Plan will be submitted to the LRA for review and approval, per Section 4.6 of the DOP.

**Comment Response Summary for the Final Draft (7/7/99) of the
Building 776/777 Decommissioning Operations Plan**

Reviewer	Comment No.	Sec./Page/Para.	Comment Description	Comment Resolution
CITY OF BRMFLD	N/A	4.3.2.1	Prior to removal of air filtration equipment, building walls, ceilings, and other safeguards, the materials that have been buried under the floor should be removed. We are concerned that the removal of contaminated materials from under the floor may be problematic.	Section 4.3.2.1 has been re-worded to clarify that buried equipment (i.e., SET 84) will be removed before the building is demolished. Due to the sensitivity of this work, in-process characterization of buried equipment within the Building 776/777 structure will be provided to the LRA for review. IWCP work packages, currently undeveloped, for removal of equipment buried or cemented within the building structure will be shared with the regulators per the consultative process.

Appendix F
Comment Response Summary for the Final Draft (7/7/99) of the
Building 776/777 Decommissioning Operations Plan

Revision 0
October 18, 1999

Reviewer	Comment No.	Sec./Page/Para.	Comment Description	Comment Resolution
CITY OF BRMFLD	N/A	Table 5	FREE-RELEASE CRITERIA - The PCB free-release value of 50 ppm in Table 5 is not specifically provided in 40 CFR 761.62 as written in the table. Please provide justification for the statement "95% Upper Confidence Limit (UCL) of the mean value of a representative sample does not exceed 50 ppm."	As noted by the City of Broomfield, the PCB free-release value of 50 ppm is not specifically provided in 40 CFR 761.62, nor is there a reference to an "95% Upper Confidence Limit (UCL)." Upon further review of the PCB regulations, it has been determined that the release threshold of <1 ppm PCBs is the appropriate (i.e., most conservative) threshold and should be listed in Table 5. As indicated in 40 CFR 761.61(a)(4)(1), <1 ppm PCBs is the threshold for bulk PCB remediation waste in high occupancy areas. This is also consistent with the free-release concentration provided in Section 4.4.4 of the DOP.

**Comment Response Summary for the Final Draft (7/7/99) of the
Building 776/777 Decommissioning Operations Plan**

Reviewer	Comment No.	Sec./Page/Para.	Comment Description	Comment Resolution
CITY OF BRMFLD	N/A	Sec. 8.4	AIR EMISSIONS CONTROLS AND MONITORING - The DOP states that "air emissions will be controlled and monitored in accordance with the Site H&S Program and applicable environmental regulatory requirements." We are particularly concerned with how emissions which are generated during demolition activities will be controlled and monitored. The City of Broomfield requests a copy of the documents that describe how air emissions will be controlled and monitored.	Air emissions controls and monitoring to be employed during demolition activities will be described in the demolition modification to this DOP, which will be submitted for a public comment period equivalent to that for the initial Building 776/777 DOP. Prior to building demolition (i.e., during building component removal and decontamination activities), the heating, ventilation, and air conditioning (HVAC) systems in Building 776/777 will be configured and controlled to ensure that air flows from areas of least contamination (e.g., corridors, rooms) to areas of higher potential for contamination (e.g., gloveboxes). Air streams will be filtered through various stages of high efficiency particulate air (HEPA) filters, which remove particulate contamination. System interlocks will be used to shut down air supply systems to prevent air reversals in the event of a loss of exhaust air flow. The Building 776/777 Basis for Interim Operations (BIO) describes the HVAC controls in further detail. A copy of the BIO will be provided to the City of Broomfield.

**Comment Response Summary for the Final Draft (7/7/99) of the
Building 776/777 Decommissioning Operations Plan**

Revision 0
October 18, 1999

Reviewer	Comment No.	Sec./Page/Para.	Comment Description	Comment Resolution
CITY OF BRMFLD	N/A	Sec. 8.4	AIR EMISSIONS CONTROLS AND MONITORING - (continued from previous page)	The Air Quality Management (AQM) group within Kaiser-Hill Environmental Systems and Stewardship (ESS) operates effluent, ambient, and meteorological monitoring systems to characterize and quantify the air pathway impacts of Site activities on public receptors. The RFETS air monitoring programs are described in Section 4 of the "RFETS Integrated Monitoring Plan," (May 1998), and in the "Proposal to Use Environmental Sampling for Demonstrating Compliance with 40 CFR Part 61, Subpart H" (July 1997) and associated addendum (December 1998). As requested, copies of these documents will be provided to the City of Broomfield.
CITY OF BRMFLD	N/A	Sec. 4.7	INDEPENDENT VERIFICATION - Independent sampling and testing is an important element in verifying that all areas have been completely decontaminated. Sec. 4.7 of the DOP states that independent sampling and testing may be included as part of the independent verification. We request that the word "may" be replaced by the word "will."	Independent verification will be performed by an independent reviewer(s) selected by DOE, RFFO. Additional sampling and/or testing may be ordered on a case-by-case basis, at the discretion of the independent reviewer(s).

Appendix F
Comment Response Summary for the Final Draft (7/7/99) of the
Building 776/777 Decommissioning Operations Plan

Revision 0
October 18, 1999

Reviewer	Comment No.	Sec./Page/Para.	Comment Description	Comment Resolution
CITY OF BRMFLD	N/A	Sec. 8.5	POTENTIAL IMPACTS TO AIR AND WATER DRAINAGES - The DOP states that following the removal of buildings and other containers within the Cluster, bare ground will pose the potential for erosion of those soils by wind and water processes. The DOP states that "silt fencing or a similar protective device will be installed to prevent or minimize the possibility of water-borne soil leaving the immediate area and entering the drainage ways." This concept may not be protective of human health and environment.	The analysis of potential impacts to air and water drainages will be revised, as necessary, in the demolition modification to this DOP, which will be submitted for a public comment period equivalent to that for the initial Building 776/777 DOP.
CITY OF BRMFLD	N/A	Sec. 8.5	POTENTIAL IMPACTS TO AIR AND WATER DRAINAGES - In traffic areas, rock aggregate should be placed over bare ground in addition to silt fencing to control wind and water erosion. Alternatively, revegetation and/or application of soil stabilizers should be used for non-traffic areas as these techniques are likely to be more effective at controlling soil erosion from wind and water.	The analysis of potential impacts to air and water drainages will be revised, as necessary, in the demolition modification to this DOP, which will be submitted for a public comment period equivalent to that for the initial Building 776/777 DOP.

Appendix F
Comment Response Summary for the Final Draft (7/7/99) of the
Building 776/777 Decommissioning Operations Plan

Revision 0
 October 18, 1999

Reviewer	Comment No.	Sec./Page/Para.	Comment Description	Comment Resolution
CITY OF BRMFLD	N/A	Sec. 6.2.8	POTENTIAL IMPACTS TO AIR AND WATER DRAINAGES - Section 6.2.8 states that waste water generated from decommissioning activities may be treated or directly discharged in compliance with the requirements of the NPDES permit. What are all the types of water that could be directly discharged? Where would these discharges be routed?	No wastewater that is generated during decommissioning will be discharged directly to the environment. The only water that is directly discharged is effluent from the Site's sewage treatment plant in accordance with the terms and conditions of the NPDES permit. The sewage treatment plant accepts (1) domestic wastewater; (2) non-domestic, non-hazardous, non-radioactive wastewater (i.e., cooling tower water, boiler blowdown); and (3) wastewater that meets the definition of an "internal waste stream" (i.e., non-hazardous, non-radioactive wastewater generated during building operations and/or decommissioning activities). Wastewater entering the sewage treatment plant must meet the applicable acceptance criteria. Effluent from the sewage treatment plant is monitored at three outfalls (the sewage treatment plant, Pond B-3, and Pond B-5 [under the NPDES permit]) and two points of compliance (Pond B-5 and Walnut Creek at Indiana Avenue [under RFCA]). Section 6.2.8 has been revised accordingly.

**Comment Response Summary for the Final Draft (7/7/99) of the
Building 776/777 Decommissioning Operations Plan**

Revision 0
October 18, 1999

Reviewer	Comment No.	Sec./Page/Para.	Comment Description	Comment Resolution
CITY OF BRMFLD	N/A	Sec. 8.10	POTENTIAL IMPACTS TO AIR AND WATER DRAINAGES - Section 8.10 states that dust and sediment generation from the project may reach Walnut Creek; therefore, potential impacts to the Preble's meadow jumping mouse habitat are a concern. The DOP fails to state that water quality standards for Walnut Creek are very stringent and that if actinide-laden dust or sediment generated from this area reaches Walnut creek, that a violation of the water quality standard could easily occur.	The analysis of potential impacts to air and water drainages will be revised, as necessary, in the demolition modification to this DOP, which will be submitted for a public comment period equivalent to that for the initial Building 776/777 DOP.
CITY OF BRMFLD	N/A	Sec. 10	IMPLEMENTATION SCHEDULE - Although some schedule information is provided in Appendix E, it is not clear when major activities related to the Building 776/777 Cluster deactivation and decommissioning will be occurring. From the text provided in Sec. 10, the first major schedule date is FY04; however, the schedule in Appendix E shows that activities are already occurring. The DOP also states that the information is based on the 2010 closure schedule. Please provide a schedule that includes just the major activities covered by the Building 776/777 DOP according to the 2006 Plan.	The new version of Figure 4, Set Prioritization, shows the year in which each SET is scheduled to be decommissioned. The new project schedule (included in Appendix D of the DOP) provides additional detail. Finally, all references to the "2010 Plan" have been changed to the "Closure Project Baseline" so that the DOP will remain current and will not require modifications when the plan changes.